

Profitable **DUCK MANAGEMENT**

6th Edition

by
J. M. Hunter



THE BEACON MILLING COMPANY, INC.
CAYUGA, NEW YORK

FOREWORD

THE BEACON MILLING COMPANY has blazed the trail in the field of commercial duck feeding, being the first feed manufacturers to develop *a complete line of duck feeds for commercial use.*

When the Company first became interested in the feeding of ducks, in 1926, J. M. Hunter, formerly Assistant Professor at New Jersey State College, took charge of the Beacon research program on duck feeding.

For fourteen years to date (1940) this work has continued. Carefully checked records on more than 100,000 ducks have established a new knowledge of duck nutrition, and a basis of proven facts, for the formulation of improved rations for both meat and egg types of ducks.

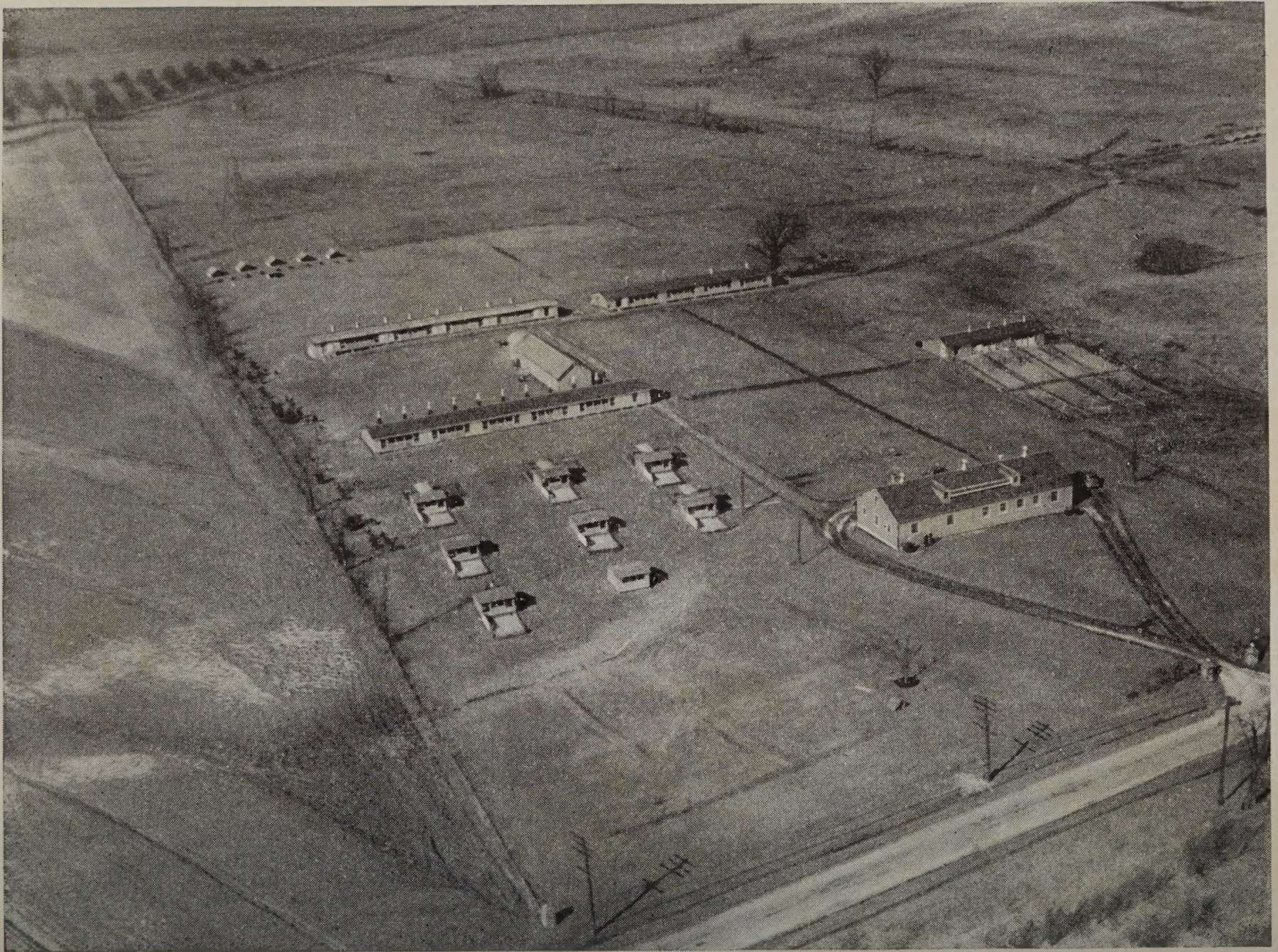
This work has made possible the selection of those kinds and grades of feed materials which get the desired results most efficiently and do so at the lowest cost to the producer.

The research program will be continued, with the goal of still greater efficiency and economy in duck feeding as new discoveries make improvements possible.

In December, 1933, as a result of this research work, Beacon introduced duck feeds in pellet form, the greatest single advancement in modern commercial duck feeding.

It is hoped that "Profitable Duck Management" will be of practical help and service to all those who are engaged in growing or keeping ducks for profit.

THE BEACON MILLING COMPANY, INC.
CAYUGA, N. Y.



Aerial View of the POULTRY RESEARCH FARM of the **BEACON** MILLING COMPANY at Cayuga, New York (1938)

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ENTRANCE TO BEACON POULTRY RESEARCH FARM, CAYUGA, N. Y.
Sixty Acre Modern Plant Devoted to Research Work for the betterment of Beacon Feeds and Improved Poultry Management
Visitors always welcome week days (Sundays by appointment)

Profitable Duck Management

Live and dressed ducks are sharing an increasingly important part in our Eastern Poultry Markets.

In our previous edition of Profitable Duck Management (1937) we said, "Modern science in duck feeding nutrition, has now made possible a 6½ lb. live duckling at ten weeks of age." We realized at that time we were making a broad, but sound statement. As this edition goes to press, word comes from Douglas J. Hayes of Massachusetts that 3086 Beacon fed ducks dressed on his farm between May 6th and 10th (1940) gave an average of 6.518 lbs. (dressed weight). These ducks averaged sixty-three days of age and the figures include 130, No. 2 ducks and 8 culls. Sixty-five ducks were thrown back alive. These almost unbelievable weights for nine week old ducks do demonstrate what Beacon Duck Feeds can accomplish with good management. We dare not predict what the next few years will accomplish.

This extreme growth and development at an early age provides a table delicacy unexcelled in flavor and tenderness.

Ducks supplying the larger poultry markets come chiefly from two types of producer—the commercial duck farm and the general purpose farm where ducks are regarded as a side line. Both have their place in the field but profits from ducks for meat, depend largely on rapid growth.

The duck industry as a whole has weathered good and bad times in the past and will undoubtedly continue to develop as an important branch of American poultry keeping.

Late in 1933 The Beacon Milling Company, in placing on the market the first complete line of duck feeds in pellet form, removed one of the most costly burdens of feeding ducks.

The advantages of pellets over wet mash are briefly summarized as follows:

1. Economy — Pellets represent a saving of fifteen to twenty per cent in the feed required to produce a market duck.
2. Convenience — Ready to feed just as they come from the bag.
3. Reduced handling costs — Several handlings eliminated.
4. Labor reduced and equalized.
5. No sour, stale or dried-out feed with pellets.
6. Pellets simplify feeding.
7. Beacon Duck Pellets produce heavier, more uniform ducks at an earlier age.
8. Feed waste is reduced to a minimum with pellets.
9. Drinking fountains and troughs stay cleaner when pellets are fed.
10. Pellets improve sanitary conditions — No wet feed to mold or attract flies.
11. Winter feeding is greatly simplified with pellets.
12. Pellets eliminate the need of expensive mixing machinery.
13. Pellets reduce disease hazards.

Feed Requirements For Market Ducks

The question is often asked, "*How many pounds of feed are required to produce a market duck?*" This is extremely important for feed is the greatest single item of cost in growing ducks. Too many are satisfied to accept price per ton as their guide and pay little attention to results in terms of cost per pound of meat or per dozen eggs.

The amount of feed a duck will eat to attain market weight naturally depends on such factors as:

- Vitality of duckling at beginning.
- Quality of ingredients in the rations.
- How well the rations are suited.
- Market weight required.
- Age of duck at marketing.
- Conditions of management, weather, etc.

Experienced duckmen who feed home mixed mashes, figure that a duck up to eleven or eleven and a half weeks of age, consumes 28 to 32 pounds of feed. If under unfavorable conditions, growth takes twelve to thirteen weeks, the feed required may go to 35 pounds.

The Beacon Milling Company has, through fourteen years of constant research, developed rations that not only produce a pound of gain on less feed, but at less cost per pound of meat and the ducks are ready for market at an earlier age.

Prior to the introduction of pellets for ducks, 26 pounds of mash was considered standard for Beacon feeds. Pellets, however, have eliminated waste and with improvements from time to time we have been able to establish new standards. The average of several trials at the Beacon Research Farm, gave an entire flock average of 6.47 pounds live weight at ten weeks and on an average feed consumption of 24.08 pounds per duck, or a feed requirement of 3.72 pounds per pound of live weight. By applying current prices of Beacon Duck Pellets to the amounts of each given in the table below, the feed cost with Beacon is fairly accurately determined.



DUCK YARDS AND HOUSE AT
THE BEACON POULTRY RESEARCH FARM
CAYUGA, N. Y.

Note the "ditch type" swimming pool running through each of the yards and supplied from a hydrant at the upper end.



Courtesy C. Bruno, Riverhead, L. I.

Beacon Duck Pellets hauled direct from car to self-feeders.
Each feeder holds approximately one-half ton.

FEEDING SCHEDULE FOR BEACON DUCK PELLETS

The following table is based on the average result of experiments with Pekin ducks, grown at various seasons of the year at The Beacon Poultry Research Farm:

Kind of Feed	Age	Length of Time to Feed	Lbs. Pellets Required per Duck
Beacon Duck Starter	1st-21st day	3 weeks	2.56
Beacon Duck Grower	22nd-56th day	5 weeks	14.22
Beacon Duck Fattener	57th-70th day	2 weeks	7.30
Total		10 weeks	24.08

RESULTS WITH BEACON PELLETS ON COMMERCIAL DUCK FARM

The following authentic results were secured on a Long Island Duck Farm where Beacon Duck Pellets were fed exclusively to all market ducks for the past four years:

Year	No. Ducks Marketed	Aver. Wt. Lbs. (dressed)	Lbs. Feed Consumed Per Duck	Lbs. Feed Per Lb. Duck Meat	Per Cent Mortality	Aver. Age of Ducks Marketed
1938	31,000	6.156	25.07	4.07	2.74	9 weeks 6 days
1939	36,000	6.190	25.97	4.19	3.79	9 weeks 6 days

On the basis of .5 of a pound shrinkage (blood and feathers) per duck, the average live weight for the two years would be 6.673 pounds or one pound live weight of duck on 3.824 pounds of Beacon Duck Pellets.

The above figures covering two complete year's operations under

commercial conditions, tell a brief but remarkable story of what can be accomplished with Beacon Duck Pellets plus good management.

Several farms have produced outstanding results on the Beacon program of feeding but complete figures are not available.

Weather, season, vitality of stock and management, each have an important bearing on the weight of the duck at marketing time.

By comparing the above figures on pellets with wet mash requirements it is at once apparent to the experienced duck grower, that actual feed requirements on Beacon Duck Pellets are several pounds less per duck than with wet mash.

The saving in pounds of feed and shortening the time required to develop and fatten the ducks more than offsets the difference in price per ton of Beacon and home mixed mash. In addition to the saving in pounds of feed required, Beacon pellets are ready to feed just as they come from the bag. This means additional saving of several dollars per ton in labor, handling, waste prevention and mixing costs. Pellet feeding is also more sanitary, thus lessening the chances of loss from disease.

IMPORTANT FACTORS FOR THE BEGINNER

Breed of Duck—The question of breed best suited for the commercial duck farm (for meat purposes) has been decisively answered in favor of the Pekin. Some twelve breeds of ducks are more or less popular in this country from the standpoint of exhibition and general utility, but the Pekin has been universally adopted on commercial farms where a specialty is made of producing duck meat in the form of Green Ducks or Roasting Ducklings, so popular in the present day markets of the East. The Pekin combines well all the essential features for commercial conditions. First of all, Pekins do well in confinement, are hardy, do not fly, are heavy layers, give little trouble from broodiness and are early maturing. This breed of duck is also very practical in that there is little difference in the weight of the males and females at marketable age.

Feathers are an important by-product of the commercial duck farm and the great preference for white feathers in the American markets, places the Pekin and White Indian Runner in favor for feather value.

Location is of considerable importance. Ducks do best in a moderate climate. A light sandy soil is a distinct advantage in maintaining sanitary yards and surroundings. A dependable water supply is very necessary. This may be furnished by a never failing stream of water running through the farm, or a pond, the water of which is continually changed by springs. or by pumping.

Salt water or brackish water not satisfactory — Until recent years salt or brackish water was regarded as satisfactory for "water front" ducks, provided fresh (sweet) water was reasonably convenient for drinking purposes. We now have considerable evidence that feed consumption is lower resulting in slower gain in weight, where ducks have access to salt or brackish water, even if fresh water is conveniently and constantly supplied. Even with conditions just mentioned the ducks will drink enough salt water to impair their appetites and retard gains. This means reduced profits and maximum gains in the shortest possible time largely determine profit.



Courtesy Martin R. Maurer, Riverhead, L. I.

"BIG DUCK"

Trade Mark Registered (Patent No. 296767)

An excellent example of road side advertising. Inside of Mr. Duck's husky carcass is a clean, modern sales room with refrigeration and display cases.

Brackishness may be overcome in narrow tidal streams by placing a flood gate at the mouth of the stream. By hinging the gate at the top, it will swing shut and hold back the tide. As the tide lowers, the gate will open and lower the head of fresh water which has backed up during high tide.

Where duck farming is on a large scale, it is essential to be located near a railroad station or improved highway where shipping facilities are convenient for getting feed, litter and other materials to the farm, and for marketing dressed and live ducks at low cost.

Adequate Markets for duck meat are absolutely necessary. The fact that ducks will not wait for a market without loss of profit to the owner, makes prompt marketing essential. Ducks eat heavily, grow rapidly and thus reach a market age and condition at from nine to twelve weeks, depending upon the program of feeding and management; therefore, **if they are held for a much longer period, molting starts with a consequent decrease in rate of gain, and often a loss, in weight.**

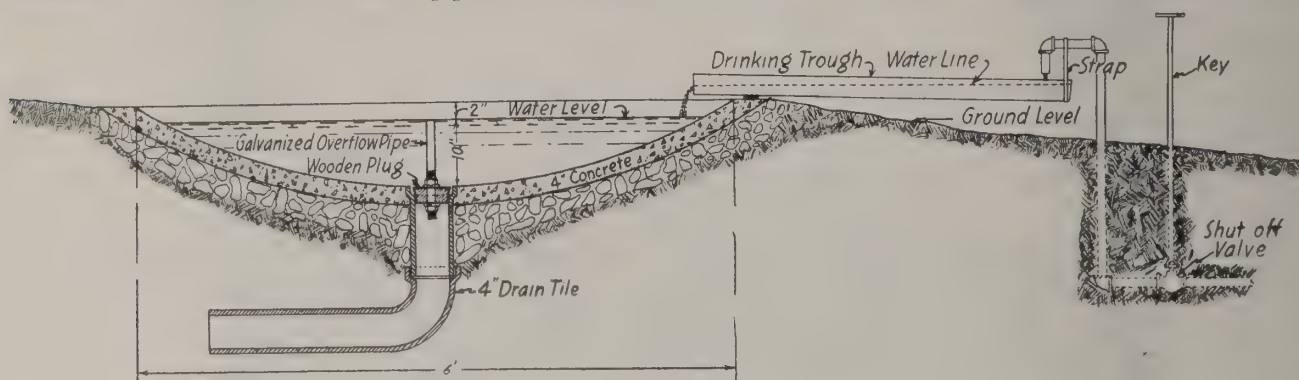
Local markets will often absorb a limited supply of live ducks, but as few people care to undertake dressing ducks, the local market for live ducks is very limited in most sections and a surplus is likely to result. Summer Resort Hotels, Tea Rooms and Roadside Restaurants provide an excellent market for fresh killed ducklings during the seasons when they operate.

Intelligent Feeding—Feed is by far the greatest single cost item in producing ducks for market. It is vital therefore that the feeding program meet efficiently the changing requirements of ducks through the starting,

growing and fattening period. For more detailed discussion of feeding problems see index.

HOUSING AND WATER ACCOMMODATIONS

Correct Housing does not compel the construction of expensive or elaborate housing accommodations, though quarters for the young ducks must be equipped with heat and should be so constructed that a uniform temperature can be maintained at all times. As the ducks become older, their buildings require less heat or no heat at all, depending on climate, season, etc. As ducks approach eight or nine weeks of age, very little or



ARTIFICIAL POOL MAY SUBSTITUTE FOR RUNNING BROOK

The above sketch illustrates one method of constructing a concrete swimming pool. A 6 foot x 6 foot concrete basin with two sides sloping as shown above, is sufficient area for as many as 200 mature ducks.

Artificial ponds require frequent changing of water and thorough cleaning if they are to be satisfactory. Note provision for drinking water with trough between hydrant and pool. The overflow pipe regulates depth of water, prevents the pool over flowing and serves as a convenient handle on the clean out plug at bottom of pool.

This "basin type" pool may be made any length desired and thus serve several pens. In extremely cold weather the pool should be drained each night. It is advisable to have about two inches of coarse gravel extending several feet back from all sides of the pool to prevent the formation of mud puddles.



Courtesy Philip S. Gordon, Eastport, L. I.

A BREEDER HOUSE OF GOOD TYPE

The high walls and half monitor roof provide much cubic air space and light. With the house fronting south, these windows permit much sunlight during the winter months.

no housing is necessary, except during severe weather. From the seventh or eighth week to killing time, a stream or pool of water where the ducks can wash themselves daily is quite essential. Contrary to the opinion of many, ducks do not require a large area of water or conditions for unrestricted swimming and diving. In fact, ducks being finished for market will do better if the stream is shallow and just enough area allowed to enable them to keep their plumage clean and get plenty of fresh drinking water. The source of water supply is highly important. Brooks fed by springs are ideal. A dam across the stream and fitted up with a flood gate, enables the owner to flush out the stream occasionally to wash away all manure and filth and thus keep the water supply in good condition at all times.

Efficient Management and Dependable Labor are requirements of the first order on the duck farm. Experienced operators of commercial duck ranches well appreciate that ducks are heavy feeders and develop rapidly, and that it is absolutely necessary for all operations to keep pace with these constantly changing requirements. Conditions of feed, shelter, yards, etc., are constantly changing factors on the commercial duck plant. On most commercial plants it is impossible for the owner to give personal attention to all details and experienced men are placed in charge of the more important operations, such as care of the breeders, incubation, brooding, preparation of the feed and the management of the killing and packing shed.

The introduction of pellet feeds in 1933 by The Beacon Milling Company has greatly simplified the labor incidental to feeding the ducks, as pellets may be fed direct from the bag and the hoppers may be filled at



Courtesy East River Duck Farm, Eastport, N. Y.

SHOREFRONT DUCKS ON BEACON PELLETS

Twenty-five or more hoppers with a capacity of 1½ tons each. A series of gates permit a truck to pass from one yard to another and fill the hoppers direct from the box cars. The total hopper capacity on this farm equals better than five cars of feed. Thus labor costs are reduced by one handling of the feed. Note weather-proof covers on hoppers and bottom gates which may be closed if feeding time is to be restricted

any time day or night thus enabling the average commercial farm to operate with one or two fewer men.

The labor requirements on a commercial duck farm depend very largely on three factors: **Organization** — No farm will endure present day competition unless all operations are carefully planned and intelligently supervised. **Whether Pellets or Wet Mash Is Fed** will make a difference of one to three men or more depending on the size of the operation and how well the plant is equipped for the pellet feeding program. The third factor affecting the number of men required on a given farm is based on the **Amount of Contract Hauling**. Under some conditions it may prove economical to contract the hauling of feed to and manure from the farm thus reducing the direct pay roll as well as investment in truck equipment. Obviously no one set rule will cover all conditions. A very rough estimate would be one man to each 10,000 to 15,000 ducks marketed exclusive of pickers.

IMPORTANCE OF GOOD BREEDING STOCK

Breeders are the foundation upon which the year's output of ducks depends. The stock commonly found on the commercial farms of Long Island, Massachusetts, New Jersey, and Pennsylvania, when properly developed, are very similar in general characteristics. It is entirely possible, however, that growers might find a larger percentage of prime ducks and that the flocks could be driven to the killing sheds at an earlier age if more attention were paid to the selection of breeders with natural deep fleshing qualities. Proper feeding has an important bearing on the percentage of seconds and throwbacks, but feed can always accomplish more with birds of improved type and conformation.

For every breeder on the farm that reproduces an inferior market duck, there are from 50 to 75 offspring to be sorted out as the hatches are killed. If a flock of one thousand breeders contains 10 per cent of individuals contributing inferior offspring, the owner must either market from 5,000 to 7,500 ducks as seconds or bear the costs of culling, time and feed to put them in market condition. It is pretty generally conceded among experienced duck men that a good part of such costs are not recovered. The breeding flock represents a heavy investment in feed, labor and care. It is, therefore, imperative that the breeders represent the best in type, breeding and vigor.

SELECTING BREEDERS — FEMALES

Future breeding stock selected from second year breeders offers several possible advantages over selections made from first year breeders. If the flock of breeders is to come into lay December 1st at the age of seven months, it means they are the product of May hatches. This means that if the parent stock were in their first season's production, that selection was based on parents that had been in lay only three to four months. On the other hand if the breeder flock is carefully gone over toward the end of the laying season (July to September) retaining only the best individuals still in lay, then you are in a position to improve your flock average through the perpetuation of only the best individuals year after year. Selecting breeders from first year parents leaves the decision to be based on the individual and with no consideration for the parent.

The normal healthy flock of breeders coming into production at the



Courtesy East River Duck Farm, Eastport, N. Y.
A GOOD EXAMPLE OF BULKHEADING A SHOREFRONT

age of seven months bear a very close resemblance one with another. It is impossible to distinguish between the short from the long time layers but the following summer tells the story. A percentage of the flock will show faded bill and shanks but will still be laying heavily while others will be dressed up in a new coat of feathers and show deep yellow pigment in bill and shanks, indicating that they have been out of production for as much as two months.

When selecting future breeding stock, look for birds showing bright clean plumage and large well developed bodies. The size of head should be in proportion to body and should show large clear, bright bulging eyes (always examine both eyes). Discard those with coarse, heavy heads or showing small, dull or sunken eyes. Handle the birds individually for natural fleshing qualities, body conformation and weight. Select those with broad deep bodies, a straight long keel reaching well back, broad back carried out level to the tail, a wide, deep pelvic region assuring plenty of room for egg development, strong legs and sound feet. A breeder is no better than its legs. Breeders should be able to travel well. Walk each breeder through a narrow lane for a distance of at least fifty feet. Reject all bow-legged individuals or individuals that show tendencies to interfere as a result of being pigeon-toed. The legs should be well apart (denoting wide breast and good abdominal capacity), but they should be straight and the duck should exhibit an alert appearance and move with style and vigor. Heavy ducks may walk with a characteristic waddle which is not objectionable provided it is due to straight legs set wide apart and not to bowed or improperly set legs.

More attention must be paid to the selection of breeders and greater emphasis on leg structure if the goal is a six pound market duck at nine weeks.

TWO YEAR OLD BREEDERS

On most ranches breeders are retained for but one season and then shipped to market just as soon as the production and hatchability of their eggs become unprofitable for the owner.

It is considered among poultrymen that continuous hatching from young pullets for several generations is likely to decrease size and vigor of the strain. While the flock may be at its peak for health and freedom from disease at this time, yet the opportunity for improvement is limited, for the flock is as yet unproven. Poultrymen find that eggs from pullets after a moult, are more satisfactory for hatching. They are larger, more uniform and produce chicks of stronger vitality and better livability.

The fact that many duckmen appear to experience satisfactory results in selecting breeders from pullet parent stock is probably due to the fact that they normally go through several partial moults before coming into egg production. **Each moult makes the young breeder hardier and stronger.** It is also evident that first year breeders produce larger, smoother and more uniform eggs as the laying season advances.

Perpetuating the flock from second year breeders is recommended if it can be arranged to allow the breeders a long rest period between seasons and provided the ducklings hatched from the older breeders are superior in size, vigor and livability.

THE DRAKE

The size of drake selected should be in proportion to the size of duck. It is well to have drakes at least a month or more older than the ducks. The same general points should be emphasized in the drake that we look for in the duck; size, vigor, ruggedness, deep body well proportioned in length and breadth, with strong legs and good carriage should be sought for.

The introduction of new blood each year is not necessary. In fact, it is much safer to introduce new blood gradually and cautiously.



Courtesy D. J. Hayes, Sterling, Mass.

PICK OUT FUTURE BREEDERS EARLY

Young ducks almost old enough to make preliminary selection of Breeders.

Flock improvement is possible and should come through constant selection for better breeders. It is a better policy to select the young breeders from several hatches rather than from a single hatch and the preliminary sorting should include enough extras so that later and final selections will permit close discrimination against all defects.

Some duckmen prefer a medium to small type breeder in the belief that they will lay a larger number of eggs, but if large individuals show quality and breediness, it is believed that they will not only lay a satisfactory number of eggs but at the same time produce offspring that will develop into heavier, more profitable market ducks.

TIME TO SELECT BREEDERS

Notwithstanding the common practice of selecting future breeders from hatches which have been fattened for market, this does not seem to be good practice. In the first place most fattening rations contain a heavy percentage of corn, which is not only heating but produces a lot of internal, as well as external fat, and does not promote ideal frame development desirable in breeding ducks.

The forcing of young breeding stock (both males and females) into prime market condition on a heavy corn diet is considered very detrimental to all other breeds of livestock and poultry. Filling the body cavity with this extra fat prevents the normal development of the reproductive organs and their full functioning powers later when the heavy grind of egg production begins.

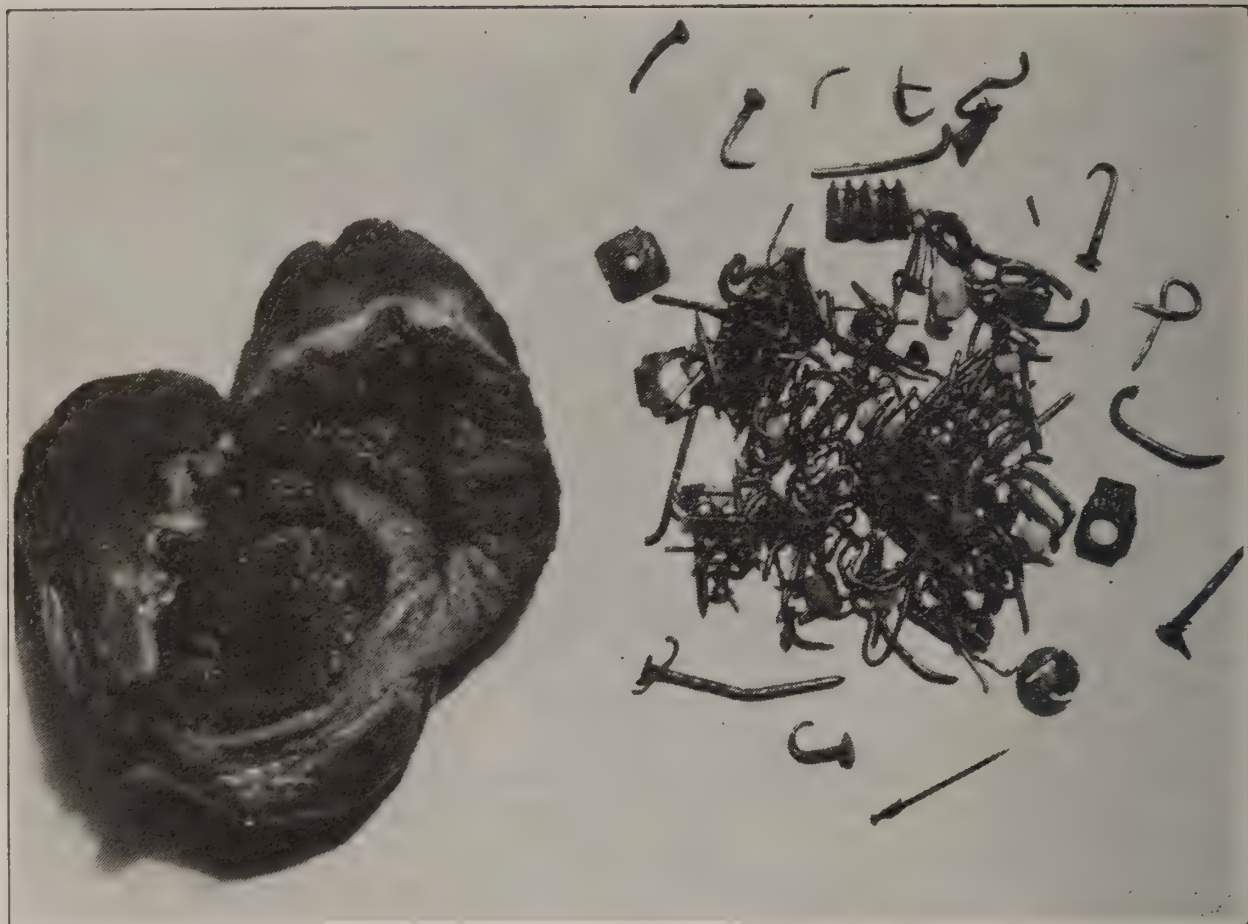
It is false reasoning to think a young breeder must be fattened for market to prove her worthy of a place in the breeding pen. A preliminary selection for vigor, natural fleshing tendencies and other qualities of a good breeder may be fairly accurately determined at seven or eight weeks of age. Continuing the birds intended for breeders on a good growing feed (see "Management of Breeders After They Are Selected") spares them discomfort of reducing after being fattened and they continue their normal development and approach maturity in a much more natural manner.

Breeders should be at least seven months old when they come into egg production. By figuring back approximately seven months, from the time you expect the young breeders to lay, the hatches from which it is desired to select breeders can be determined and given particular attention as they develop. The young breeders should be selected from the very best hatches. The eggs from which future breeders are hatched should be especially selected for uniformity of size, shape and shell texture.

MATING

Under average conditions one drake to five or six ducks is about right. Climate and even individual season are factors in determining the proportion of drakes to ducks. For New England, one to five, or twenty drakes per hundred ducks, is customary. Long Island, New Jersey and Pennsylvania, with their milder winters, experience satisfactory results with fifteen to seventeen drakes per hundred ducks.

Because of the uncertainty of the winter weather throughout the northeastern territory, it is safer practice to use a few extra drakes dur-



Beacon Research Laboratory

DUCKS REQUIRE MINERALS BUT NOT IN THIS FORM

This is an actual photograph of the gizzard from a Muscovy Duck, expressed alive to the Beacon Laboratory. Upon post mortem examination the gizzard was found to contain this assortment of metal

Beacon Feeds are safeguarded by being passed over magnetic separators to remove all metal. (The owner of this duck had never fed Beacon.)

ing the winter months with a view to culling out as the advancing season requires, based on close observation of the flock and condition of eggs at testing time.

As spring weather conditions approach, the drakes usually become more active and may injure or kill a percentage of the ducks from excessive treading. Where it is intended to carry the breeder flock on into the summer it is practical to retain these extra drakes for later use should the percentage of clear eggs (infertile eggs) increase later on in the season. The presence of an unusual percentage of ringer eggs (bloody ring formation about the germ) on the fifth to seventh day of incubation usually indicates that some of the drakes should be taken out.

Drakes should be at least as old as the ducks and preferably a month older if it is planned to have the flock start egg production at six to seven months of age.

There are some advantages in allowing the drakes to be with the flock from the time they are selected. Having the drakes and ducks together simplifies the feeding and yarding program, and usually insures better fertility from the first hatches. If the breeder flock is to be divided into several pens before egg production starts, it is necessary that the drakes be carefully checked and proportioned for each pen at time of final culling.

MANAGEMENT OF THE BREEDERS AFTER THEY ARE SELECTED

When selecting the young breeders at seven to eight weeks of age, the number originally picked out should include from five to ten per cent more than will finally be needed at the beginning of the breeder season.

From this time on until the young breeders are housed for the winter every possible measure should be taken to see that the flock is properly developed and conditioned for egg production. It is not necessary to pamper the flock but certain conditions should be met.

Feed for the young breeders is important. Both drakes and ducks should be continued on a good growing ration until about twelve weeks of age, or until moulting starts.

If the breeders are selected and put aside at seven or eight weeks of age, we recommend Beacon Duck Growing Pellets and Beacon Duck Fitting Grains or mixed grain (including whole corn, oats, barley and wheat) with plenty of green forage to run on. If pasture lots are not available we strongly urge the combination including Beacon Duck Fitting Grains.

FEEDING PROGRAM FOR YOUNG BREEDERS

After the young breeders reach the age of twelve to thirteen weeks and begin moulting, body condition is secondary to vigor and exercise. The object is to increase their weight through development and gradually add body condition until they are in their regular laying quarters and before egg production starts. When laying begins they should be in good body flesh, not corn fat but solid flesh that will stay with them over a long period.

During the period between twelve weeks and the time they come into production the flock should build up a reserve of muscle, bone, nerve energy, feathers and vitamins.

A scant feeding of corn meal, bran and a little flour is not a satisfactory fitting ration for this purpose.

The following program is recommended to bring the young breeding flock into prime condition for a successful hatching season:

8 - 13 Weeks of Age —

Allowance per 100 ducks:

15 pounds Beacon Duck Fitting Grains and 20 pounds Beacon Duck Grower mixed and divided into a morning and night feed.

If hopper feeding is preferred — Mix 3 bags Beacon Duck Fitting Grains and 4 bags Beacon Duck Grower. Leave the hopper open for one hour each morning and night.

14 - 25 Weeks of Age —

Allowance per 100 ducks:

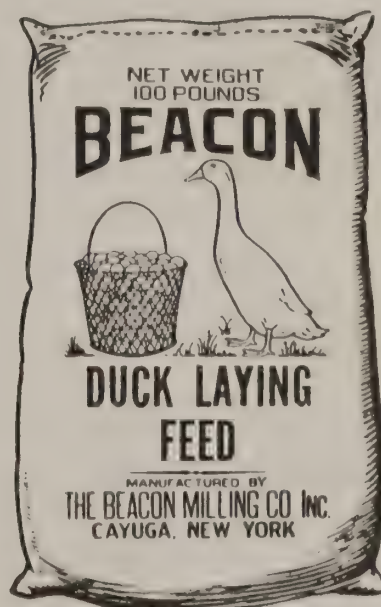
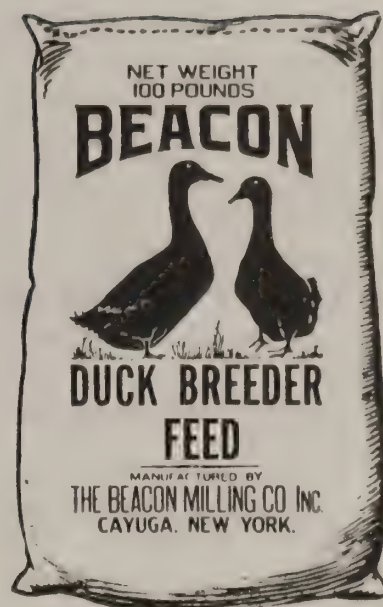
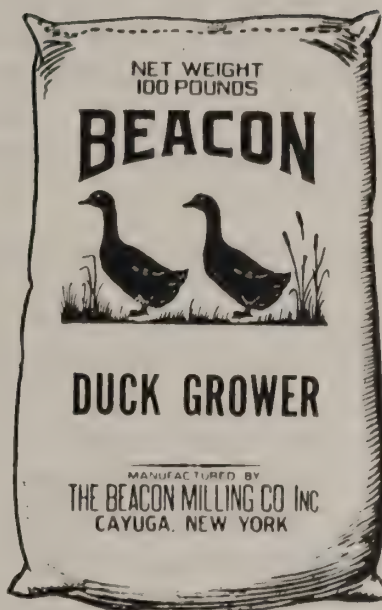
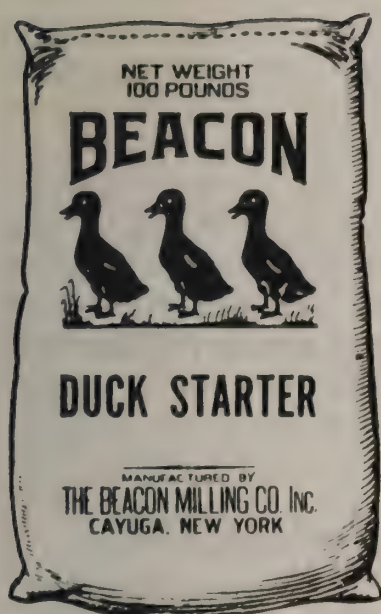
23 pounds Beacon Duck Fitting Grains and 12 pounds Beacon Duck Grower mixed and divided into a morning and night feed.

If hopper feeding is preferred — Mix 6½ bags Beacon Duck Fitting Grains and 3½ bags Beacon Duck Grower. Leave hopper open for one hour each morning and night.



PROTEIN DETERMINATION

This is the very best and the most modern apparatus for this purpose and on it 24 analyses can be made at one time, with absolute accuracy. Typical of the up-to-date equipment to be found throughout the Beacon Laboratory



**BEACON DUCK PELLETS ARE EASILY IDENTIFIED BY THE
DESIGN ON THE BAGS**

Beacon Duck Pellets are thoroughly tested and proven before being offered to the public.

If ducks are lazy and do not forage, cut down on grain, as foraging keeps them active and saves on grain. Late in season, if green food runs short or becomes frosted, increase pellets.

About four weeks before you want eggs, replace Beacon Duck Grower Pellets with Beacon Duck Breeder Pellets and decrease the Fitting Grains until you are feeding 70 to 75% Breeder Pellets and 30 to 25% Fitting Grains. Make the change in 10 to 14 days.

IF BREEDERS LAY TOO SOON

If eggs show up before they are wanted or before the breeders are of proper age and condition, changing to different quarters will usually break up the layers. Too much animal protein in the feed may be the

cause. It is a mistake to starve breeders to hold back egg production, because they are just approaching the time when they are going to need all their reserve powers. If lights are being used dim them by using smaller bulbs, but do not put lights out entirely as it may cause the ducks to mill about and become crippled. An egg or so per day with no noticeable increase should not be cause for alarm. **On the other hand, if the breeders are eight months or older and in good condition, it is better to shift them over to the egg-producing feed and meet the situation with correct feeding rather than to make further attempts to check production.** The first eggs can be marketed or possibly a neighbor can use the eggs or ducklings and thus avoid further restraining measures.

HOUSING THE BREEDERS FOR EGG PRODUCTION

Before placing the young breeders in their permanent laying quarters, it is essential to have the house thoroughly cleaned, disinfected and aired out. Cleaning the breeder house should start as soon as possible after the previous lot of breeders is removed. It is better practice to have the house in a clean condition during the idle period between seasons. Walls and ceilings should be swept down, partitions and walls and floor sprayed with a good disinfectant. All nesting partitions, feed trays and water utensils should be thoroughly cleaned and disinfected. The pens should be bedded down with fresh bedding material (straw or shavings) just before the young breeders are admitted.

If the drakes have not already been placed with the ducks, this will be a very convenient time to make the flock matings. It is well to make a careful count of drakes and ducks in each pen and have the record filed for future reference.

At the time the flock is transferred to winter quarters it is necessary to sort the flock for a careful check-up of drakes and ducks for each pen. **Experience indicates that not more than 200 breeders should be housed in a single pen,** 100 or 125 would be still better. Small flocks are quieter and more contented with the result that there will be fewer cripples and fewer eggs broken than in larger flocks. Cannibalism and other destructive habits started by a single individual may spread throughout an entire pen. Therefore with fewer breeders per pen, the amount of damage resulting is less wide spread.

ISOLATE CRIPPLED BREEDERS

Throughout the laying season, and particularly during the fore part, quite a few lame or injured ducks may be noticed among the flock. This condition may be due to excessive treading by the drakes and if the injured ducks are not removed to other quarters, they will likely be dead in a short time. By carefully watching and removing all such individuals, what might represent a big loss may be turned into a profit. Birds shifted to an isolation pen where they may have shelter, exercise and water will usually come into production again after a short rest period. Definite figures on a pen of crippled breeders handled in the above manner showed them to be very profitable, as against making no special provision for them.

THE BREEDER HOUSE

The breeder house should have a favored location on the duck ranch and the supply of water should be the best. When we consider the tremendous strain put on the breeding flock, for as much as nine or ten months of egg production, it is only natural that every reasonable effort should be put forth to provide comfortable quarters.

Two systems are common in the housing of breeders. The central house (one long house) and the colony house system, both have their advantages. In general the plan of the house should provide four square feet or more of floor space per breeder. The house should be equipped with sufficient ventilators to insure dry walls and ceiling and a constant supply of fresh air.

A common fault in breeder house construction is to have the side walls too low. This cuts down the cubic air space and makes proper ventilation difficult. In a good house, the wall at the back should be at least five feet high and the front wall should be from eight to ten feet high and carry plenty of windows, preferably arranged to open in at the top.

Every pen should have a three by three foot window in the back for convenient intake of bedding and removal of manure. By lifting out the front and back windows, the house may be made very comfortable in the summer time. All windows and other outlets left open for ventilation in duck houses should be covered with wire netting to prevent dogs, cats and birds from getting in and disturbing the ducks. These precautions are especially important for the breeding flock. **The outside fence around the breeder pens should also be dog proof.**

Nests should be provided around the walls of each of the pens, on the floor. **There should be at least one nest for each three to five breeders.** Nests for ducks are very easily made. The top and bottom should be left open. Home made nests may be easily constructed by making partitions 12 x 14 inches held apart by a 6 inch board running along the wall. The partitions should be nailed to this board 11 inches apart, which represents the width of each nest. A small shingle lath should be nailed along the bottom front border of the series of nests to help make the construction rigid. This leaves the bottom, front and top open. By placing straw or shavings in these nests the ducks will soon get the habit of laying in the nests rather than on the floor. Eggs from clean dry nests hatch better and are less likely to require washing.

WHAT IS BETTER DUCK BREEDER FEED WORTH?

This table shows how a few more ducklings per breeder will more than pay the difference in cost between Beacon Duck Breeder Feed and an ordinary breeder mash, made to sell at a price. In the following table we are assuming that the feed consumption is the same, which of course it is not, for breeders will eat enough less feed on the well balanced high quality Beacon Ration so that often the cost of feeding Beacon vs. a cheaper ration would be no greater, or actually require 25 to 30 per cent more of the cheaper ration than they will of Beacon Breeder Feed.

As stated we will assume that the feed consumption is the same.

Based upon a seasonal feed consumption covering 8½ months or

250 days, at $\frac{1}{2}$ pound per breeder, per day, each breeder will consume 125 pounds or $1\frac{1}{4}$ bags per breeder.

At the following prices per duckling, the better feed is worth the amounts more per ton as indicated below:

	More Ducklings Per Breeder Produced	When Ducklings Are Worth		
		12½c Per Duck	15c Per Duck	18c Per Duck
When the Better Breeder Feed in- creases Number of Ducklings per Breeder for the Season by —	3	\$6.00	\$7.20	\$8.64
	4	8.00	9.60	11.52
	5	10.00	12.00	14.40
	6	12.00	14.40	17.28
	7	14.00	16.80	20.16
	8	16.00	19.20	23.04
	9	18.00	21.60	25.92
	10	20.00	24.00	28.80

This is the way it works out: At 125 pounds per breeder, one ton of Breeder Feed will feed 16 breeders for the season. Therefore, we multiply the value of each duck more per breeder by 16 in each case. If ducklings are worth $12\frac{1}{2}$ cents each and the better breeder feed produces only three more ducklings per breeder, per season, we have $3 \times 12\frac{1}{2}c = 37\frac{1}{2}c$ more income per breeder; one ton of Breeder Feed will feed 16 breeders per season, so we multiply $37\frac{1}{2}c \times 16 = \6.00 increased value of feed per ton.

Beacon Duck Breeder Feed — The Standard of Comparison



Courtesy C. Bruno, Riverhead, N. Y.

A SANDY SLOPING YARD WITH SHADE AND WATER ARE IDEAL CONDITIONS FOR THE BREEDER FLOCK

FEED AND WATER

Whether pellets or wet mash is fed, the writer has always favored feeding breeders in the house, instead of outdoors, provided the house is built to accommodate it. Assuming, of course, that breeders are closed in their houses at night, the flock actually is shut in more hours during November, December, January and February than they are out of doors. During the day a good proportion of time is spent in or about the water. Under these conditions and because ducks are naturally night feeders, the pellet hoppers or trays should be placed in the houses. This makes it possible for the ducks to eat after they have been closed in for the night. Indoor feeding eliminates any loss of feed from weather.

RECOMMENDATIONS FOR FEEDING BEACON DUCK BREEDER FEED (Pellet Form)

The feeding of Duck Breeder Feed in pellet form vs. wet mash is fast gaining popularity for the same reasons pellets are replacing wet mash feeding for market ducks. Of course pellets are more convenient, economical, sanitary, thus promoting healthy conditions. Most important, however, is the fact that Beacon Duck Breeder Pellets do a successful job when fed according to recommendations.

Place a pellet hopper in each pen (the average 700 pound capacity hopper will furnish about 8 feet of feeding space, enough for 200 breeders). Fill the hoppers with Beacon Duck Breeder Pellets and Beacon Duck Fitting Grains in the proportion of 5 bags of pellets to 2 bags of grains. If pellets and grains are poured in alternately to form uniform layers, a satisfactory mixture will form at the mouth of the hopper. This proportion of pellets and grain should be very nearly correct for the flock from early winter to April when the fitting grains may be reduced 5% each month until only 10% of the mixture is made up of fitting grains. This proportion should be continued for the balance of the laying season.

Keep the hoppers open for not more than one hour in the morning and two hours in the late afternoon. The flock will soon learn the hours of feeding and look for their feed. Make certain that fresh drinking water is available during the time the hoppers are open and for one hour after they are closed. Arrangements for drinking water in the house up to eight or nine o'clock at night is probably as satisfactory and trying to supply water continuously particularly if the latter plan causes wet litter or danger of a freeze up.

RECOMMENDATIONS FOR FEEDING BEACON DUCK BREEDER FEED (Mash Form)

More skill is required for mash feeding than for the hopper feeding of pellets. When wet mash is fed it should be freshly mixed morning and night. Of the total amount fed in twenty-four hours, two-fifths should be fed in the morning and three-fifths at night. Beacon Duck Fitting Grains should make up about 25% of the ration and mixed with the morning and evening feed. If the grains are fed only once each day they

should be included in the night feeding. Beacon Breeder Feed is very palatable and relished by the breeders, therefore do not over feed (approximately $\frac{1}{2}$ pound per bird including grains, per day). If the breeders are thin before they start laying the amount of feed may be increased slightly until they come into production. Water conditions same as for pellet feeding.

Much of the trouble from feather pulling, vent picking and fighting are due to long hours in confinement without feed and water. Breeder flocks on pellets are generally quieter and more contented than mash fed flocks.

Oyster shells are a necessary part of the feeding program for breeders in lay. Keep them in boxes convenient to the birds at all times. **They should be clean, coarse and free from clam or mussel shell.** Quality is important and we recommend Pilot, Reef or Pearly White brands. If gravel is not available in the yards, boxes containing coarse gravel or granite grit should be placed in each pen.

EXERCISE FOR THE BREEDERS

Breeders, to continue in good condition, must be active. Large runs with a brook or fresh pond at the far end will usually take care of this. The flock should be out of doors in day time throughout the winter; also at night during warm weather. At night, however, they should be shut away from the water by means of gates to prevent them laying their eggs in the water.

When it is desired to get a young flock into production, during the early fall months, there is always danger of throwing them into a moult. If the weather is warm, the house should be kept open as much as possible and the breeders allowed the freedom of outside yards. Lights are important on early breeders. (See paragraph on "Lights.")

Lights

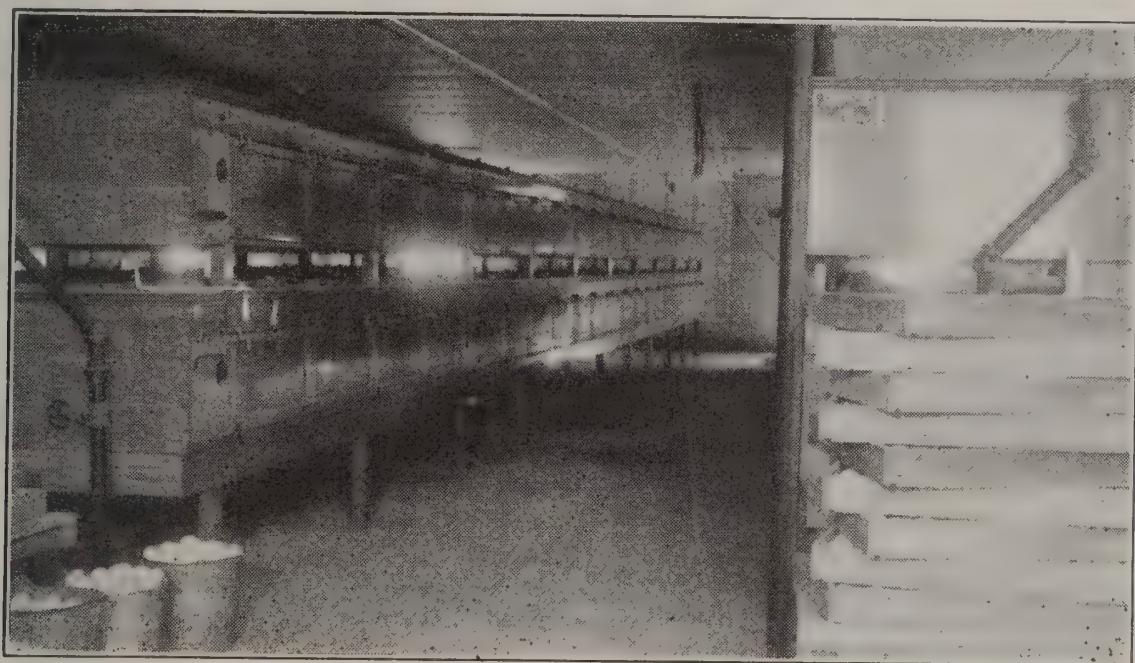
Lights at night in the breeder house serve a double purpose. They keep the breeders more quiet and regulate egg production to some extent. Recent work at the Ohio Experimental Station with lights for hens tends to disprove the theory that increased production is due to the extra feed birds will eat by reason of lights artificially lengthening the day and providing the necessary hours for extra feed consumption. It is now believed that **light rays stimulate the birds' reproductive organs** and that **egg production increases as a result of this stimulation** and not from increased feed consumption, since the birds were held to the same level of feeding.

It is only natural, however, that the appetite will increase and that the feed will have to be stepped up to meet the greater production or the birds will lose weight.

A flock of breeders under lights will come into production sooner and lay heavier than a flock carried through the season without lights. The fact is that lights may be used as a control of production. Their use, therefore, depends quite largely on what program the owner has in mind as to the length of season he plans to operate, how he wants production regulated and whether he is depending on one or more flocks of breeders.

For example, a flock on lights will usually lay heavier, finish the season sooner and go into a heavier moult than the flock without lights. Both flocks will give about the same number of eggs and hatch about the same number of ducks, but the "dark" flock will require a longer season.

Considering the added cost of carrying a flock through these extra months, the uncertainty of summer hatching—other operating costs, markets, etc., it is usually more practical to resort to lights from the beginning and get a good return from the breeders by early summer. If, by May or June, when eggs are slacking off, it seems advisable to retain the breeders for summer and early fall eggs, they can be held through the moult for a second lay. A flock that has been started in November will usually drop in June to around 25 per cent and continue in low production for about six weeks then return to a peak of 50 per cent or better through the late summer months.



Courtesy Wilcox Bros., Speonk, L. I.

TYPICAL INCUBATOR EQUIPMENT ON THE COMMERCIAL DUCK FARM
Mammoth type machines have been popular for hatching duck eggs.

Once breeders are accustomed to lights it is not advisable to cut them off entirely unless a sharp decline in production is wanted. Strong lights may be used to start production and cut down somewhat later if the birds are coming along too fast. Bright lights have a tendency to force egg production and should not be used unless it is certain that the breeders are of proper age and condition to lay.

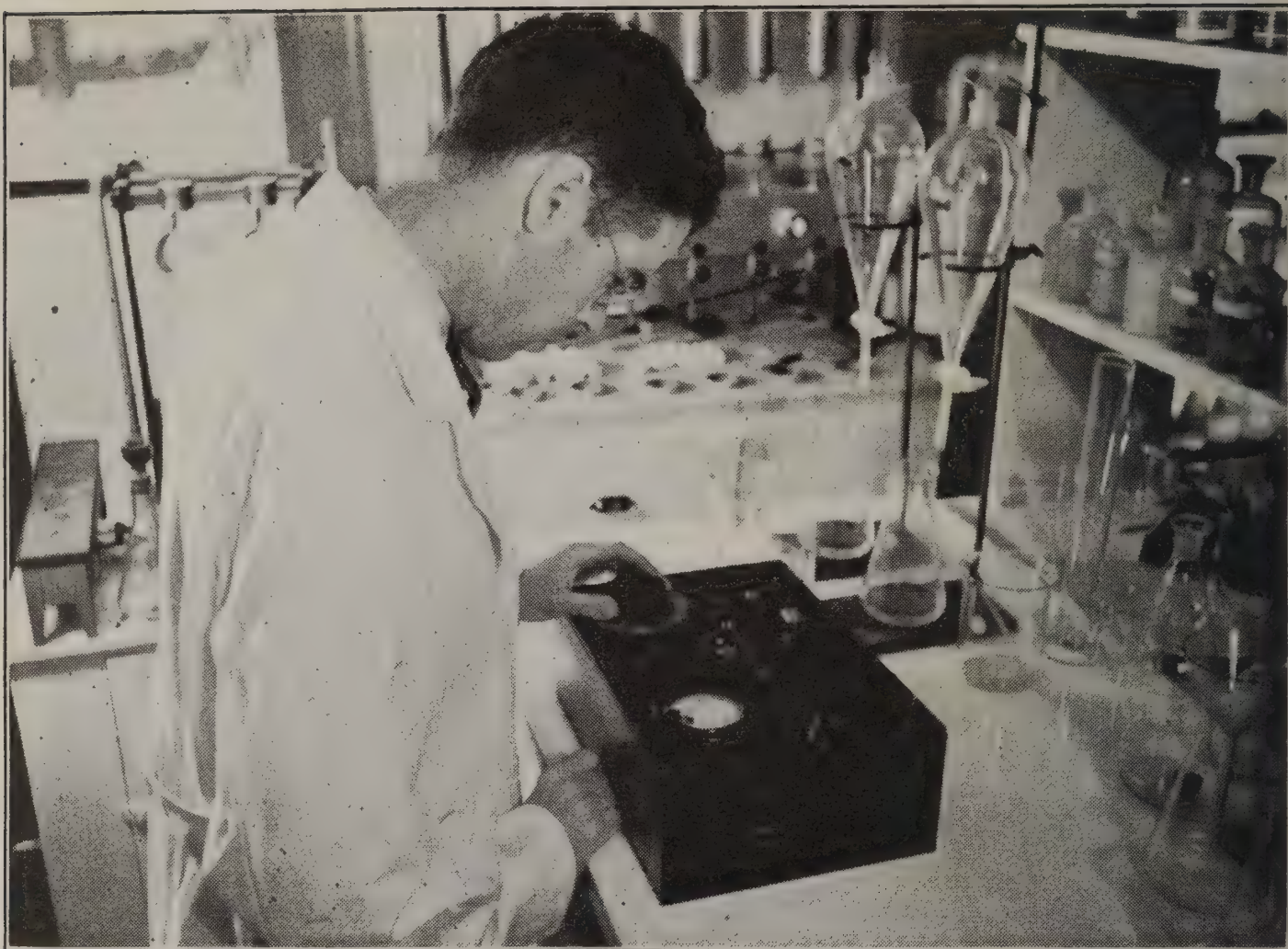
Considering a unit of 175 breeders with 4 square feet of floor space each, in a house 35 feet wide, each pen would be 35 feet x 20 feet with one outlet over each pen.

A 10 - 15 watt lamp would provide dim light.

A 25 - 40 watt lamp would provide medium light.

A - 60 watt lamp would provide strong light.

Lights should be located so that they will illuminate all of the floor area and cast a minimum of shadows.



TESTING FOR VITAMIN A

This apparatus is used in the determination of units of Beta-Carotene (pro-vitamin A) by the latest scientific method, in the Beacon Laboratory

Every shipment of feed materials used as a source of carotene (such as alfalfa leaf meal) in Beacon Rations is tested by extraction and use of the electro-photometer, before being accepted

CARE OF EGGS

Plenty of clean, well bedded nests greatly lessen the number of cracked and soiled eggs. Eggs should be gathered as early in the morning as possible after the breeders finish laying. This may be done while the breeders are still in the house, if the practice is begun early in the season before heavy production starts. Wooden pails or galvanized iron pails with a piece of burlap in the bottom make satisfactory containers for gathering eggs. During freezing weather galvanized pails should be completely lined with burlap or heavy paper to prevent those eggs touching the sides of the pail, from chilling. If the weather is severe, some precaution should be taken to keep the eggs from chilling while they are being transported from the breeder house to the incubator cellar. Blankets placed over the pails answer this purpose. **Attendants doing the feeding and gathering eggs should avoid exciting the breeders at all times.**

HOLDING EGGS

Badly soiled eggs should be cleaned as soon as possible. Perhaps the chief reason that eggs laid in the water or cold, wet places, do not hatch well, **is that they are exposed to sudden changes in temperature.** Therefore, if eggs are to be washed they should be of uniform temperature, and the temperature of the water should approximate that of the eggs. When eggs require washing, it will take less work and is better for the eggs, if done immediately. If eggs are to be held for more than a day, they should be trayed and stored in a dark cool place at a temperature of approximately 55 degrees F., until placed in machines. Rooms especially built for egg storage apart from the incubator room, where temperature and humidity can be controlled, are a good investment. **Do not leave eggs on a concrete floor.**

INCUBATION

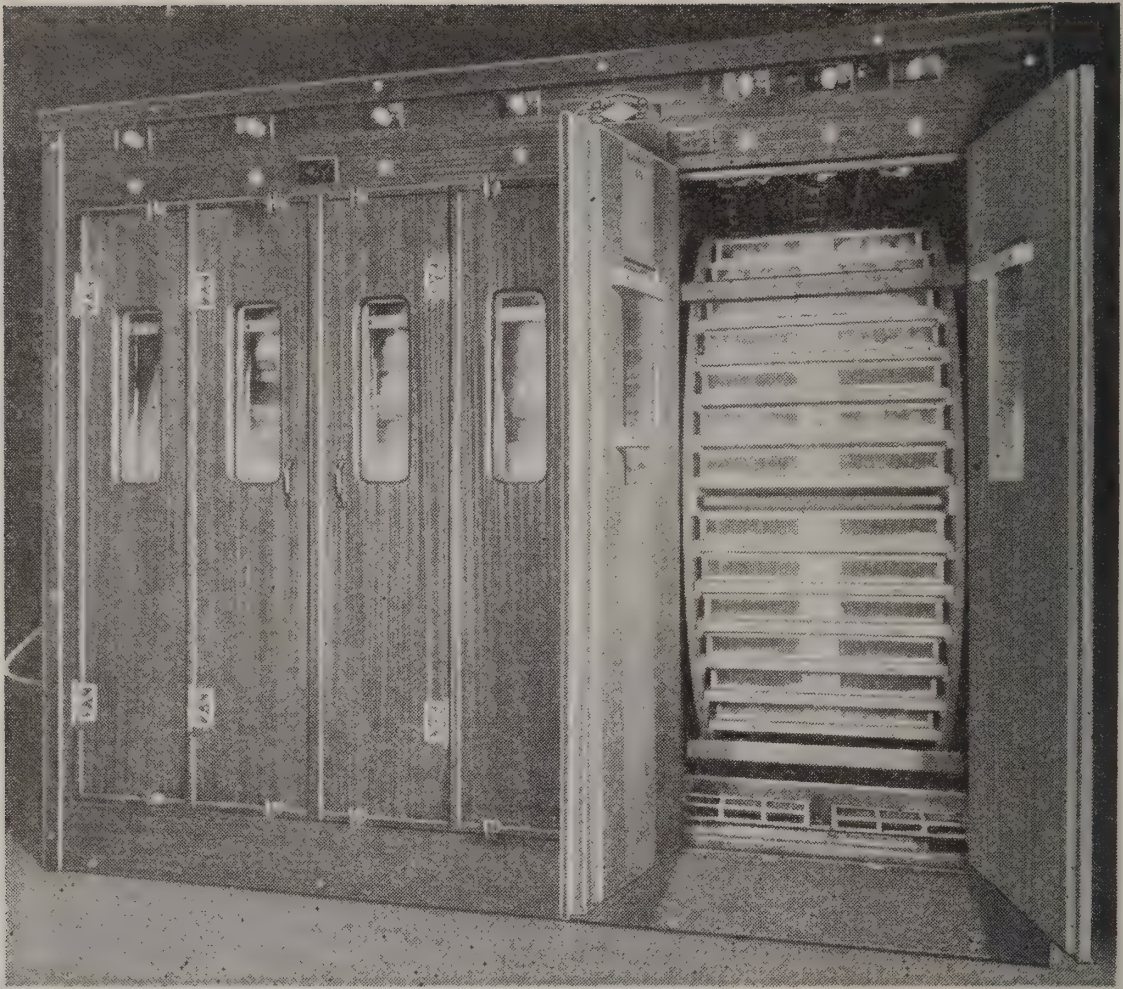
The subject of incubation is too complicated and far-reaching to be discussed in this brief space.

Various makes and types of incubators, as well as individual cellar conditions, require a variation in methods to produce the best results. Season of the year is also a factor. Any one considering the construction of a new incubator cellar or the installation of new incubators, should by all means make a very careful and thorough study of the various types of both cellars and incubators in successful use on commercial duck farms.

Good incubators, a well ventilated cellar with plenty of cubic air space, and much time spent in caring for the eggs, will usually enable an experienced incubator man to hatch a satisfactory percentage of the fertile eggs.

For those who operate incubators chiefly for hatching hen eggs and who may have occasion to custom hatch duck eggs, the following suggestions may be found helpful:

In addition to requiring four weeks for incubation, **duck eggs need much more moisture than hen eggs.** This fact makes it extremely difficult to hatch duck and hen eggs together, particularly in cabinet or force draft machines. Temperature of the egg chamber may be about the same but the change of air during the first few days should be very slight with



Courtesy Z-Process, Inc.

VIEW OF PETERSIME INCUBATOR

This modern incubating machine has many advantages over some of the earlier types used for hatching duck eggs. Less room is required, temperature and humidity are automatically controlled. The incubating and hatching compartments are separated. Those and other features make them economical and time saving.

the top ventilator raising slightly about the tenth day. **Under most cellar conditions water should be maintained in the moisture pans throughout the four weeks and the eggs sprayed daily from the 14th day on, until eggs pip.** Water of room temperature, may be sprayed directly on the eggs.

Testing for infertile eggs is done about the seventh day when all clear, cloudy and ringer eggs should be removed. **Remove at once all dead germs or rots.**

Turn the eggs at least twice daily, four times is better.

Hatchery men are often called on to custom hatch duck eggs from small farm flocks and where the eggs have been held for some time. Lack of experience by the hatcheryman, in hatching duck eggs, and the customer holding his eggs too long, represent the most common causes for unsatisfactory custom hatching.

It is often necessary to incubate eggs collected from only a few layers, requiring eggs to be held several days before putting in the machine. Under such conditions, the soiled eggs should be washed as soon as gathered and all eggs stored in a cool dark cellar (see paragraph on "Holding Eggs") until they can be put in the incubator.

BREEDER FEED AND HATCHABILITY

A great many of the incubator man's troubles lie with the breeder feed. A flock of breeders, in order to produce eggs of high hatchability over a long period of time, must be fed a ration that fully meets all the requirements of protein, carbohydrates, fats, minerals and vitamins in the correct amounts and proportions. **A complete breeder feed is not only a feed that produces eggs but one that maintains the most healthy body condition of the breeder throughout the year.** No feed used on the commercial duck farm calls for more scientific knowledge in preparation, and no feed calls for ingredients of higher quality and more careful mixing than the Breeder Feed. A satisfactory egg production is necessary, but **a profit from the breeders depends on the number of livable ducks hatched.** (See "What is a better Duck Breeder Feed worth.") Not only is the Breeder Feed an important factor in satisfactory hatches, but the ability of a breeder flock to carry on for a long season depends in part on the manner in which it was fitted before going on breeder feed and before production starts. (See "Feeding Program for Young Breeders.")



Beacon Research Farm

A RELIABLE COAL BROODER

Well designed brooder stove with reserve coal hopper, soot collector and clean out—large hover for heating capacity. This brooder stove will handle 250 ducklings to the age of two weeks.

BROODER HOUSE CARE

Before the hatching season starts the brooder houses should be in complete readiness. This is not a job that can be done properly the day before the first hatch comes off. In fact it is good practice to start getting the brooder houses ready for the next season immediately after the last hatches are through in the late summer or fall. By thoroughly scraping the floors and carting away all manure and old bedding and opening up the windows the house has a chance to air out. This destroys breeding places of insects, worms, rats, mice, etc. Remove all loose equipment including hover tops, partitions, feed hoppers, water troughs. They

should be thoroughly scraped and scrubbed and exposed to direct sun light. Thoroughly saturate all floors with strong disinfectant (two parts light fuel oil and one part coal tar disinfectant, applied with sprinkling can). After the floors are dry, cover with four to six inches of clean sand. Disinfect all equipment before replacing. **Sanitation in the brooder houses helps to reduce mortality — low mortality means greater profits.**

During the season, after each hatch is moved out and before the next hatch is brought in, completely remove all litter and thoroughly sprinkle floors with disinfectant before fresh litter is put down. This program should be repeated each week throughout the season.

BROODER HOUSE TEMPERATURES

It is a common as well as a serious mistake to merely watch the brooder house temperature and neglect the hover temperature which is far more important, particularly during the first three weeks of a duckling's life. A large percentage of the mortality during the first week is due to faulty brooder temperature. It is not uncommon to find a house temperature of 80° five feet above the floor and the hover temperature also 80° or below. Unless the hover temperature (4 to 6 inches above the floor) is warm enough, the ducklings have no chance. On the other hand correct hover temperature is important but after the first few days the ducklings can usually get away from the hover if the temperature there is too warm. Too much heat has a weakening effect on ducklings and predisposes them to chills.

The following temperature chart may be used as a guide:

	Temp. under Hover	Temp. of House 5 feet from floor
First Week	90°	70°
Second Week	85°	65°
Third Week	80°	60°
Fourth Week	75°	60°
Fifth Week	—	55°
Sixth Week	—	50°-55°

BROODING THE YOUNG DUCKLING

From the time a baby duckling takes its first feed, until driven to the killing sheds, it should experience a constant gain in weight and body development. Every reasonable effort should be made to keep the young ducks coming along if the returns are to net the grower a fair profit.

Before the ducklings are brought to the brooder house, have the pens clean, freshly bedded with straw or shavings and the temperature under the hover about 90 degrees F. Have the front movable partitions of the pens moved up well toward the hovers. Then carefully place the ducklings under the hovers.

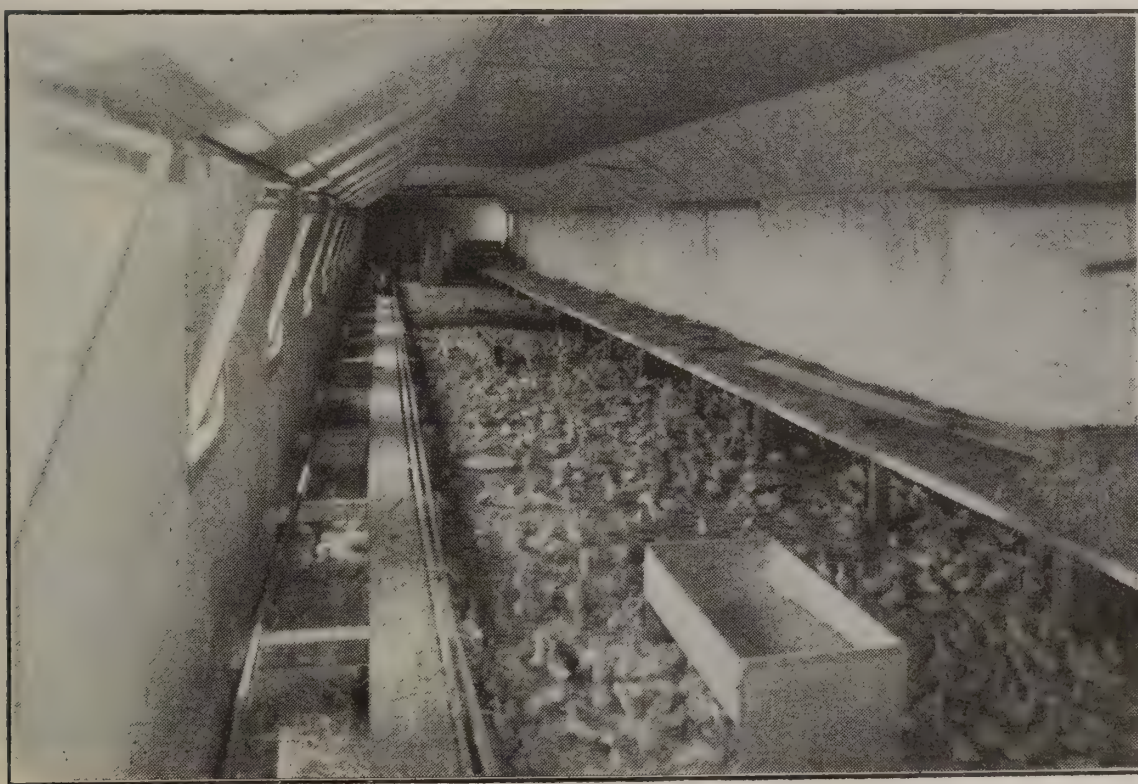
Some duckmen prefer to leave the ducklings in the incubator until they are old enough to feed, but, under most conditions, it is advisable to remove the ducklings as soon as they are dried off and the down is

fluffy. If ducks are taken to the hot brooder as soon as they are dried off, no feed should be allowed for at least twenty-four hours. During the 24 to 30 hours that ducklings are in the hot brooder without food, they are becoming stronger and more active so that they are in much better condition to digest and assimilate food when it is first offered.

THE FIRST FEEDING

Beacon Duck Starting Pellets have greatly simplified the problem of giving young ducklings a safe quick start. They should be fed from the time the ducklings are one day old until at least two weeks of age. Feed in shallow pans, troughs or hoppers, just as they come from the bag. (Do not wet the pellets.)

During the first two or three days when the ducklings are learning to eat, some pellets may be spilled over the edge of the containers. If the trough is placed on a tray or board the ducklings will keep these pellets picked up and no waste will result. When the litter is clean, dry, and not too deep, the ducklings will usually pick up any stray pellets after they are a day or so older.



Courtesy Harry Baker, Eastport, L. I.

AN IDEAL ARRANGEMENT OF PELLET FEEDERS AND WATER FOUNTAINS

Each of the two pens shown contain several hundred ducklings. Feed and water are considerable distance apart thus requiring the ducklings to take exercise which is necessary and beneficial. A tray of wet sand is placed midway between feed and water.

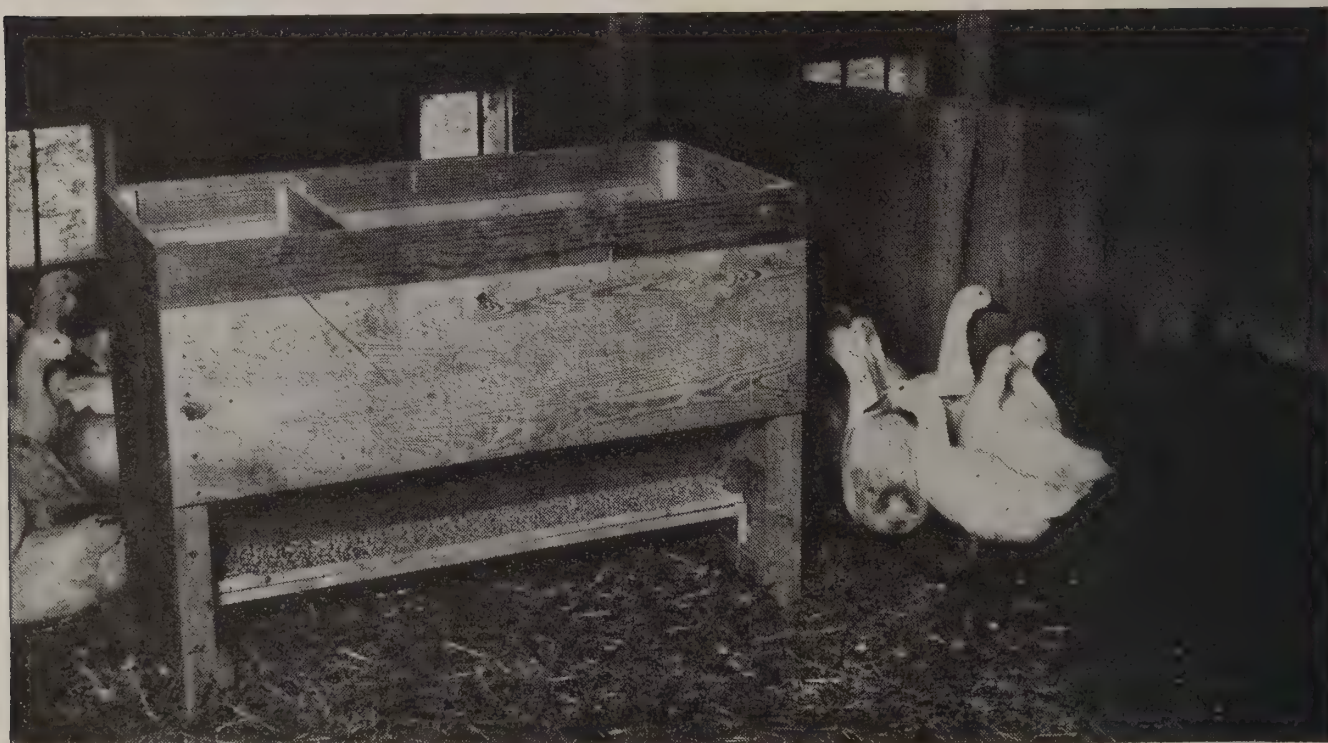
Do not worry about ducklings choking on pellets. They may seem a little awkward at first but millions of ducklings have proven them safe.

The pellets should be available at all times. Fresh water (warmed to room temperature the first few days) should be supplied continuously. The starting pellets contain sufficient high potency cod liver oil to fully

meet the Vitamin D requirement of normal ducks. There should be sufficient light so they may see to eat and drink at night. Provide containers with clean coarse sand until the ducklings are old enough to go out of doors and find their own grit.

EXERCISE IMPORTANT

With the changing of duck feeds from mash to pellet form have come several important changes in the matter of handling the ducks for best results. Pellet feeding is also a self-feeding plan, leaving it to the ducks to eat as much as they want at all times. If the pens are small with feed and water only a few feet apart, the young ducks will not get enough exercise. Therefore, after about two days of confinement near the hover, several small pens should be converted into one by removing a part or all of the partitions. Units of at least 500 ducklings may run together. Two pellet hoppers with three feet of feeding space each, and two water troughs two feet in length will nicely accommodate 500 ducklings up to three weeks of age. It is important to have these feeding and watering utensils as far apart as possible to induce exercise.



Beacon Research Farm

PRACTICAL FEEDER FOR GROWING DUCKS

This 4 foot hopper represents 8 feet of feeding space and with a capacity of 125 pounds per foot in length. Note partition near one end which makes possible the feeding of two feeds in separate compartments. The trough under hopper is removable for cleaning. A roof is necessary if used out of doors.

HEAT AND VENTILATION

Pure fresh air is the cheapest "feed" you can give to a growing duck. Too many duck growers make the mistake of expecting young ducklings to wait for their fresh air until they are old enough to go out of doors. Some regard it as unnecessary extravagance to ventilate a brooder house when high priced fuel is being burned to keep up the temperature. Right here is one of the most common faults of duck brooding. The quality of



Courtesy A. B. Soyars, Riverhead, L. I.

AN IDEAL BROODER HOUSE FOR BABY DUCKLINGS

High ceilings, plenty of windows, insulation and ventilators, make possible the correct temperature and air conditions.

air in the brooder house has a direct bearing on appetite and feed consumption. Pure air (oxygen) is fuel for the body just as much as feed and water. The blood requires an abundance of oxygen in order to fully carry on the vital processes of body building from the feed which is being digested in the digestive tract of the young ducklings. When the digested food passes through the intestinal walls into the blood stream the process is known as assimilation. If the blood fails to get its full oxygen requirements from the lungs, its powers of taking food thus assimilated, to various parts of the body, are cut short and the appetite is throttled down with the result that less feed is eaten. Such a condition retards rapid gains and lowers resistance to disease.

A WORD ABOUT VENTILATION

Perhaps no phase of commercial duck farm management has been more neglected or been so baffling to the owner as the matter of correct ventilation.

What is ventilation? Ventilation is the movement of air through a building. A ventilating system cannot also function efficiently as a moisture remover unless there is enough heat accumulated in the building to allow proper expansion of the incoming cold air, thereby enabling this air to pick up moisture and carry it out of the building.

Furthermore, it is impossible to eliminate condensation on the walls and ceiling if there is too much temperature difference between the surface of the wall and the air in the room.

Heat must be conserved. We can see, therefore, that moisture in the litter or on inside surfaces of the building must be picked up by the air. In other words, it must be evaporated as a direct result of the animal

or auxiliary heat before it can be carried out of the room or pen through the ventilating system.

It is therefore apparent that the problem of correct ventilation is greatly simplified if the house is properly insulated. In fact it is often very difficult to ventilate the uninsulated house satisfactorily in cold weather.

It is estimated by ventilation engineers that there should be not more than seven degrees temperature difference between air in room and wall surface if condensation is to be controlled.

To our knowledge no one has as yet worked out the ventilation requirements for growing ducks. In fact the conditions vary so greatly that the problem is extremely complicated. Ventilation conditions in a heated brooder house may be quite satisfactory for 5000 ten-day-old ducklings with fair weather prevailing. Two weeks later the weather may be stormy yet in the meantime those 5000 ducklings have trebled in body weight and daily feed requirements with a corresponding amount of manure adding moisture and ammonia to the atmosphere.

Space does not permit a detailed discussion of ventilation here but several articles on poultry house ventilation written by Professor C. E. Lee of this company's Poultry Research and Farm Service Department are available free upon request.

In brief the function of a ventilation system is to provide a gradual but constant intake of fresh air and discharge the foul moisture-laden air. This is accomplished through intakes and outlets. Outlets properly installed form a suction and draw the air through the building. The size and number of both intakes and outlets depends on the cubic air space,



Courtesy Guild Bros., East Mansfield, Mass.

A PRACTICAL SYSTEM FOR WATERING

This system is satisfactory for in or out of doors. The screened platforms prevent the ducks from burrowing around the troughs. If used in houses, the platform should be set in a pit about 8 inches deep, leaving the height of the platform a few inches above the level of the floor so that any water spilled through the screen will be well below the surface of the litter on the floor.

The automatic control of water makes possible the use of small troughs because the water is always at the same level.

The ducks are always assured of a supply of fresh, clean water to drink—a very important factor in duck management.

the floor area plus consideration for animal and auxiliary heat, temperature and humidity both inside and outside. If intake and exhaust flues are out of balance circulation of air may reverse itself causing down-drafts. Exhaust flues should reach well above the ridge of the roof. Ball bearing, rotary or turbine heads prevent back draft.

Fresh air intakes should enter the house at a point not less than 3½ feet above the floor. Intakes and outlets should be staggered and not directly opposite to each other. A mistake sometimes made in hot brooder house ventilation is that of discharging the out going air into the attic by means of a trap door and depend on a ventilator head in the roof to carry it away. Without a continuous stack or flue forming an almost air tight connection with the head which extends above the roof, the system is practically worthless. The exhaust stack should be insulated above the ceiling whether it passes through the attic or out doors, to prevent condensation in the stack before reaching the ventilator head.

Fresh air requirements can and should be met without sudden changes of temperature or the creation of drafts. A direct draft on ducks, when the house is hot and "steamy," is likely to be a serious matter. Windows can be hinged at the bottom and tilted in such a way that the fresh air comes in at a point well above the ducks, spreads across the room, and is gradually mixed with warmer air by the time it reaches the floor. It is well, also, to provide shields at the side of the sash to prevent the current of air from rushing directly down on the ducks. Dead air forming near the ceiling should be allowed to escape through exhaust ventilators passing up through the roof. Each brooder house presents a somewhat different ventilation problem but the principle is the same in all cases. The more crowded the house, the more need there is for efficient ventilation. Absolute control over hot brooder conditions should be maintained at all times, particularly during freakish weather, to prevent sweating and consequent chilling of ducks.

Less heat is required by ducklings on pellets than if hand fed on mash. The pellet fed ducks are never gorged with food nor are they ever underfed.

A brooder house temperature of 70° F. is about right for the first week. Reduce the temperature 5° each week until heat is discontinued. (See "Brooder House Temperatures.")

CARE OF THE GROWING DUCKLING

After the young ducklings approach two weeks of age, they are rapidly outgrowing their accommodations for room in the hot brooder.

FEED HOPPER PLANS

Construction plans for home made pellet hoppers will be mailed to customers on request. A postal card or request through any Beacon field representative will bring this service to you without charge.

They require larger pens, more feeding space, larger watering accommodations and less heat. At the same time, their daily feed requirements are rapidly increasing. Thus, it is practical to shift them to larger quar-

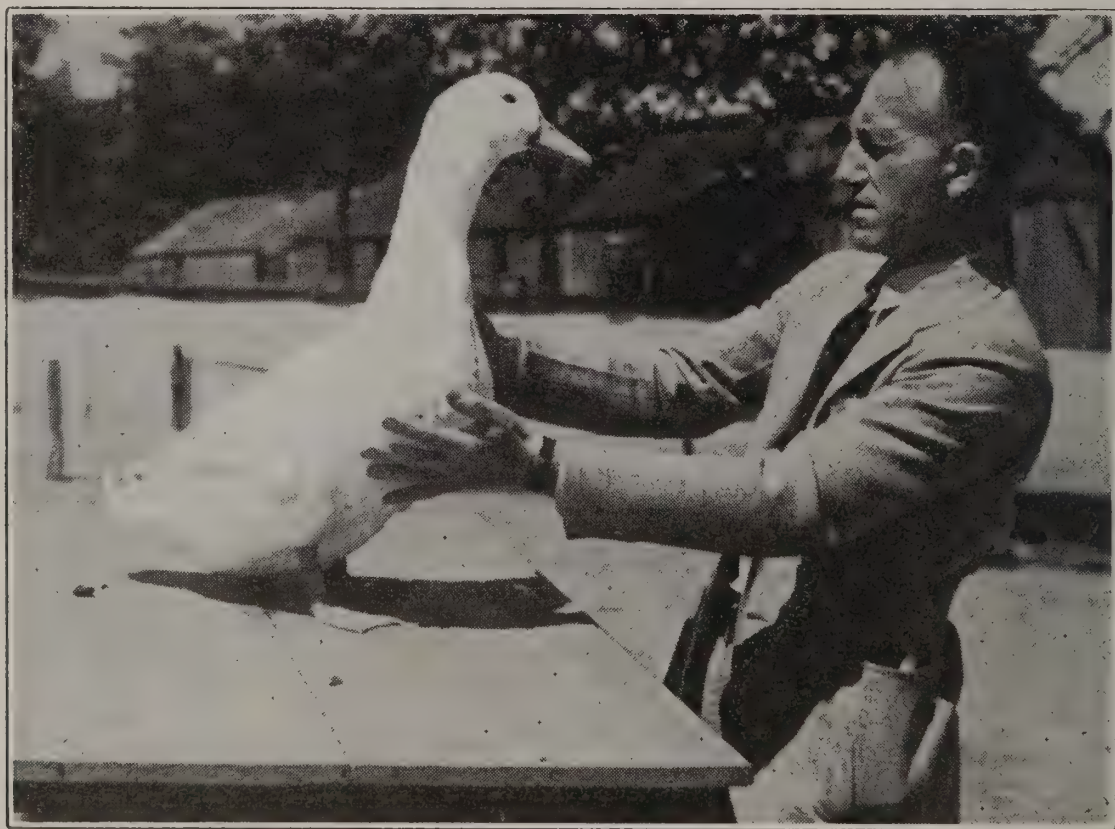
ters where all operations of care and management are handled on a larger scale. Holding ducks under hot brooder conditions too long may seriously retard growth. This is because conditions which were ideal for the first few days are no longer suitable. Ducks, at ten days to two weeks should be allowed to get out of doors if the weather is pleasant and sun shining, but, if the weather is cloudy or raw, it is better to keep the ducks inside and depend on ventilation to get fresh air into the houses. Too often the mistake is made of turning ducks out to get fresh air instead of bringing the air into the house. Ducks suffering from the lack of fresh air in the houses, are easily chilled when turned out, particularly if the weather is not warm and sunny.

The above is not intended to discourage the practice of turning young ducks out of doors for sunshine and fresh air at an early age, but rather to encourage better air conditions in the houses.

FEEDING FOR GROWTH

When the ducks are about two weeks old, they are transferred from the **hot brooder** to a second house or **warm brooder**. This is also a convenient time to change from Beacon Duck Starter to Beacon Duck Grower. When ducks are to be shifted to new quarters, they will move much better if the hoppers are closed and feed withheld for a few hours preceding the shift.

The feeding program for growing ducks is very simple. Just keep the hoppers filled and a constant supply of drinking water available. There are several advantages in having the feed hoppers in the house



Courtesy C. Bruno, Riverhead, N. Y.

THIS DRAKE ATTAINED THE REMARKABLE LIVE WEIGHT OF 10½ POUNDS
AT THE AGE OF SIXTY-EIGHT DAYS
(Beacon fed)



Courtesy D. J. Hayes, Sterling, Mass.

TRUCKING LIVE DUCKS

A practical way to transport ducks to water front yards when they are a considerable distance away.

and the water fountains out doors, as soon as the ducks are old enough to be out each day. This arrangement of feed and water induces exercise, keeps the bedding dry and makes feeding more convenient. While the ducks are still young, an indoor fountain would be required to supply water through the night and on days when weather prevents turning out.

A pen of 500 growing ducks may eat from one hopper provided there are not less than 10 feet of feeding space. These hoppers may be built to any size desired. The greater the hopper capacity, the less often they require filling. (See illustrations.)

After the ducks are old enough to remain out of doors day and night, larger feed hoppers with overhanging roofs will provide storage for pellets enough to carry the flock several days.

THE FATTENING PERIOD

Ducks intended for market should be shifted from Beacon Duck Grower to Beacon Duck Fattener at about eight weeks of age or for the final two weeks, before killing, the exact time depending on age and weight required for marketing.

Weather conditions are a big factor in finishing ducks for market. Extremely cold or hot weather slows down the rate of gain; likewise, a long continued rainy period retards appetite and rate of gain. Adverse weather conditions are more likely to affect ducks nearing market age because ducks at this period usually have more reserve body condition and for that reason the appetite is not as keen as in younger ducks. Younger ducks are also likely to have better shelter (plus artificial heat if needed) and for that reason are less affected by unfavorable weather than older ducks that are forced to remain out of doors continuously. While fair weather and uniform moderate temperatures are ideal for shore front ducks, the self-fed method of supplying pellets is much more satisfactory under any condition, than the old method of mash feeding

two or three times daily. If pellets are available 24 hours per day, the individual ducks will do a better job of regulating their requirements than can be done by the most careful and experienced hand feeding.



A PAIR OF DRESSED DUCKS WEIGHING $6\frac{1}{2}$ POUNDS EACH

The one on the left was poorly picked. Note feathers remaining on neck and pins scattered over body — thorough picking pays

DRESSING DUCKS FOR MARKET

Many ducks reaching the market as “seconds” are in every respect entitled to grade as “firsts” up to killing time. The neglect of some detail or some misfortune in one or more of the several operations of preparing ducks for market may be the cause of much misunderstanding between producer and distributor, and a financial loss to both.

Killing—Ducks to be killed should have empty crops, though not necessarily hungry or thirsty. If ducks are to be killed in the morning they should get their last feed the night before. If killed in the afternoon, they may be fed a light morning feeding. Ducks in the retaining pens awaiting slaughter should be supplied with fresh water to drink. Avoid exciting the ducks as much as possible as they do not bleed thoroughly



Courtesy Harry Baker, Eastport, L. I.

A MODERN KILLING SHED

The ducks are held in a funnel for sticking and bleeding. Next the ducks are placed on a shelf with heads in a water trough and all blood clots removed before being passed thru to the pickers for scalding and removal of feathers.

when heated up or excited. If retaining pens are crowded, ducks climb over each other with the result that many receive severe scratches on their backs. These scratches show up much more in the market than at packing time. If the ducks are well feathered over the back and not too crowded this trouble may be practically eliminated.



Courtesy Philip S. Gordon, Eastport, L. I.

FUNNEL FOR KILLING

This method of suspending the duck for killing is simple and requires no weighting of the head. The feet are free but the wings are gently wedged against the body and do not bruise. The funnel is made of medium weight galvanized iron according to the following dimensions: Top diameter, 8 inches. Bottom diameter, 2½ inches. Height of funnel, 12 inches.

Three different methods of suspending the ducks for sticking are in common practice. These are the rack, wheel and funnel arrangements. The latter is a more recent device. It is regarded as being quicker and entirely satisfactory by those who use it.

The duck is killed by thrusting the sticking knife well back in the roof of the throat and severing the blood vessels. Sticking must be carefully done and one should make sure that each duck bleeds freely. The blood clot which forms in the throat must be completely removed, and the head thoroughly rinsed in clean water. If blood spots get on the skin of the ducks after they are picked they produce stains which cannot be



Courtesy W. G. Mattison Estate, Centre Moriches, L. I.
WHEEL FOR KILLING MARKET DUCKS

Ducks are suspended by one leg in notches of top structure on wheel and head fastened in notches on lower structure. A water tight basin beneath catches the blood which runs into a tub. The operator revolves the wheel and sticks each duck as it comes in front of him. After ducks are thoroughly bled out, they are taken down, the heads washed and are then ready to be scalded and picked.

entirely removed. Allowing ducks to remain more than a few minutes after they are killed without picking also causes discoloration of the carcass.

Scalding—Correct scalding is half the picking. Scalding in water that is not hot enough (slack scald) makes picking difficult and causes shiny backs that later turn blue. If the water is too hot, or the duck left in too long, the carcass will show small pieces of skin torn out when feathers are removed, "Pox Skin," or may even cause severe tearing of the skin. **Correct temperature of water is just under boiling.**

If ducks are to be dressed on a large scale, the scalding vat should be provided with some means of keeping the water at uniform temperature, either a steam pipe from a nearby boiler or an oil burner, directly under the vat, may be used. A pipe line with faucet over the vat for tempering the water and replenishing the supply, rounds out the equipment necessary to scald as many as one thousand or more ducks per day. If only a few ducks are to be dressed at a time, a wash boiler may serve for scalding but an ordinary pail, as used for chickens, is too small for ducks.

In New England the duck growers follow the practice of dry picking

for the Boston market. This method requires more time; the pin feathers are shaved off with sharp knives. Under conditions not demanding dry picked ducks, the scald method will be found easier and more satisfactory in general.

If the head and feet are kept above the surface of the water while the body is being scalded, they will retain the bright yellow color and make a much better appearance on the market. This can be accomplished by bending the legs backward and upward so that the feet may be held



Courtesy Harry Baker, Eastport, L. I.

PICKING DUCKS

A typical Long Island picking house, where ducks are scald picked. Scalding water of correct temperature (195°-200° F) is constantly maintained by an automatically controlled oil burner.

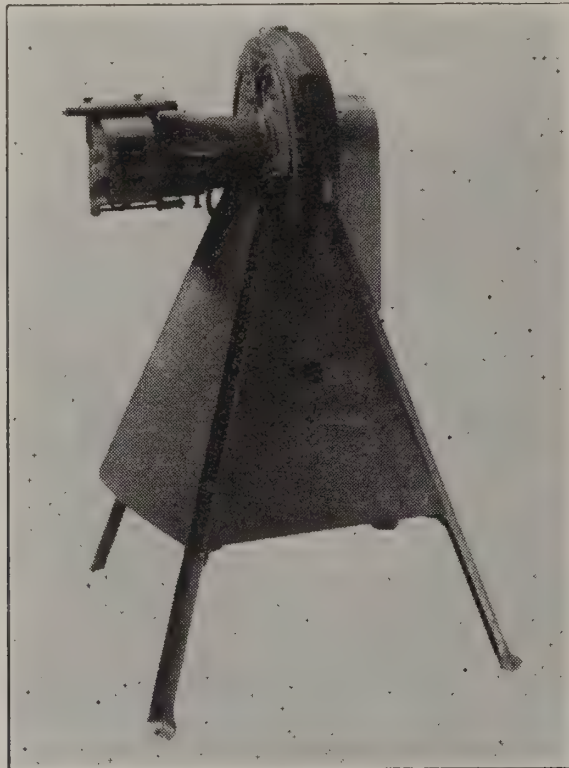
with one hand at the rear of the body and the head with the other hand. Then by lowering the duck into the scalding vat and repeating a backward and upward motion, the water and steam work into the base of the feathers. By frequently testing the feathers one can avoid over-scalding. A little practice will soon enable the beginner to do a thorough job of scalding.

After scalding, the duck is placed on a board or bench and picked immediately. An experienced picker will remove almost as many feathers by rubbing the carcass with the hands as by picking with the fingers. Rubbing the feathers off is particularly effective over the surface of the back and wings. It is customary when picking for the city markets, to remove all wing and tail feathers. The neck is picked, up to a point about half way between head and body.

The removal of the pins may require as much time as picking the feathers. This is done with the aid of a small knife; an ordinary paring knife is satisfactory. Pin feathers come out easier if the picker will again

plunge the duck into the hot water and remove quickly, before starting to remove the pins.

A good duck picker will pick from 75 to 100 ducks in ten hours.



PLUCKING MACHINE

MECHANICAL PLUCKERS

Many attempts have been made to replace the hand picking of ducks (and other poultry) by some form of mechanical devise. Until recently such attempts have met with very little success.

There is now on the market a machine known as "The Mechanical Plucker." This machine appears to be giving satisfaction among New England duck farmers where ducks are dry picked and where quite a number of the machines are in use. These machines are recommended only for dry picking. After the ducks are stuck and bled, the operator removes most of the feathers by machine and the job is completed by hand. It is claimed that this combination of mechanical and hand picking reduces the time and cost of picking ducks by the dry method.

For complete information and price write to D. J. Hayes Pine Crest Duck Farm, Lancaster, Massachusetts.

THE WAX METHOD

The wax method which has been developed for poultry also offers considerable promise with ducks. The two farm unit size systems we have seen demonstrated include the thermostatically controlled electric unit put out by the Apothecaries Hall Co., Waterbury, Conn., and the Poulson Oil Burning Semi-Scalder and Waxer also thermostatically controlled for sale by Harold Waymouth, Elm Street, Pepperell, Mass.



Beacon Research Farm

THE WAX METHOD OF DRESSING DUCKS
After the duck is stuck and bled it is given a semi-scald and rough picked including the removal of wing and tail feathers



Beacon Research Farm

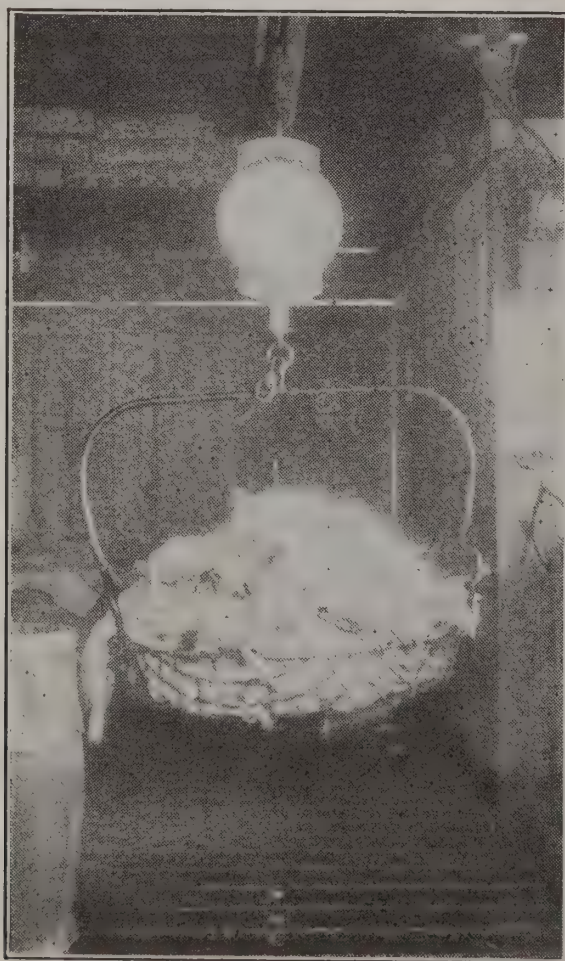
When the skin of the duck is dry after being rough picked, it is dipped once or twice in the melted wax. Next immerse the duck in water to chill and harden the wax. By cracking the wax along the legs and breast line and drawing the skin away from the wax "shell," the entire coating, including wax, feathers and pins is removed.

The principle is very similar with both systems. The equipment includes two tanks, one for the scald water the other for melted wax. The temperature of both water and wax is thermostatically controlled.

The ducks are first stuck and bled then given a semi-scald and rough picked. After the surface moisture on the skin has evaporated the ducks are dipped once or twice in the melted wax. Then immersed in water to chill and harden the wax which is then cracked and carefully removed taking the remaining feathers and pins with it. After wax is remelted and the feathers strained out it is ready for use again. Naturally some practice and experience are necessary for best results.

Seldom does a new machine come on the market or is a new process introduced, that will perform perfectly from the start but if there is need for a better way of getting a job done, that way will be found. We firmly believe that the time is near when some method, possibly a combination of machine and wax, will replace hand picking — especially where the operation is on a large scale and where skilled hand pickers are scarce.

A practical combination picking bench and feather box is made by constructing a box 2 feet deep, 2 feet wide and any length desired. To one side attach a board running full length of the box. This board should be at least a foot wide and attached to the side of the feather box so as to form a bench or shelf for picking. The edge of the board should overhang the side of the box and tilt slightly toward the box so the feathers fall into the box and so any water from the feathers will drain into the box. If more picking space is needed, a similar bench may be attached to the opposite side of the box and pickers may sit at each side of the picking box.



Courtesy Philip S. Gordon, Eastport, L. I.

A PRACTICAL SCALE FOR WEIGHING DRESSED DUCKS

The scale pan has a screen bottom for drainage and the scale is suspended from an overhead track. This makes it convenient to load the scales at the chilling vats and move any distance convenient for packing in barrels.

Chilling—Just as soon as the ducks are picked they should be placed into tubs or vats of clean cold water. If many ducks are to be dressed, the water should be changed frequently, either by a continuous stream in and out or by occasionally changing the water completely. Experienced operators on the large commercial ranches usually depend on two sets of tubs for cooling and chilling.

The ducks are first placed in tubs or barrels of cold water, where a part of the animal heat is removed, then they are transferred to larger tanks or vats. These tanks are partially filled with fresh cold water and the ducks placed in, breasts down. Over the ducks is placed a layer of cracked ice and blankets spread over the top or a lid closed to prevent the warm air getting in. Here the ducks should remain until the carcasses are thoroughly chilled and the flesh firm and hard.

Packing—If ducks are thoroughly chilled before packing, less ice is required in shipping container for safe keeping than if the ducks still retain any amount of animal heat when packed. Depending on the ice used in packing to complete the cooling of the ducks is faulty practice. A few extra dollars spent on ice is usually good economy.



Courtesy H. F. Corwin & Son, Aquebogue, L. I.
PACKING DUCKS FOR MARKET

After the ducks are picked and thoroughly chilled they are placed on draining racks. Before packing in barrels, the ducks are carefully inspected, counted and weighed. Holes are bored in the bottom of each barrel to drain the melted ice. Several methods of packing ducks are followed. Usually the ducks are placed flat on their sides. Two or more layers of cracked ice are put in and shaken down, as the ducks are being packed. After all ducks are in, a deep layer of ice should be put on top. A water proof cover is wedged on under the extra hoop and nailed for shipping.

Weather, time in transit, and the condition of the ducks at time of packing, largely determine the ice requirement.

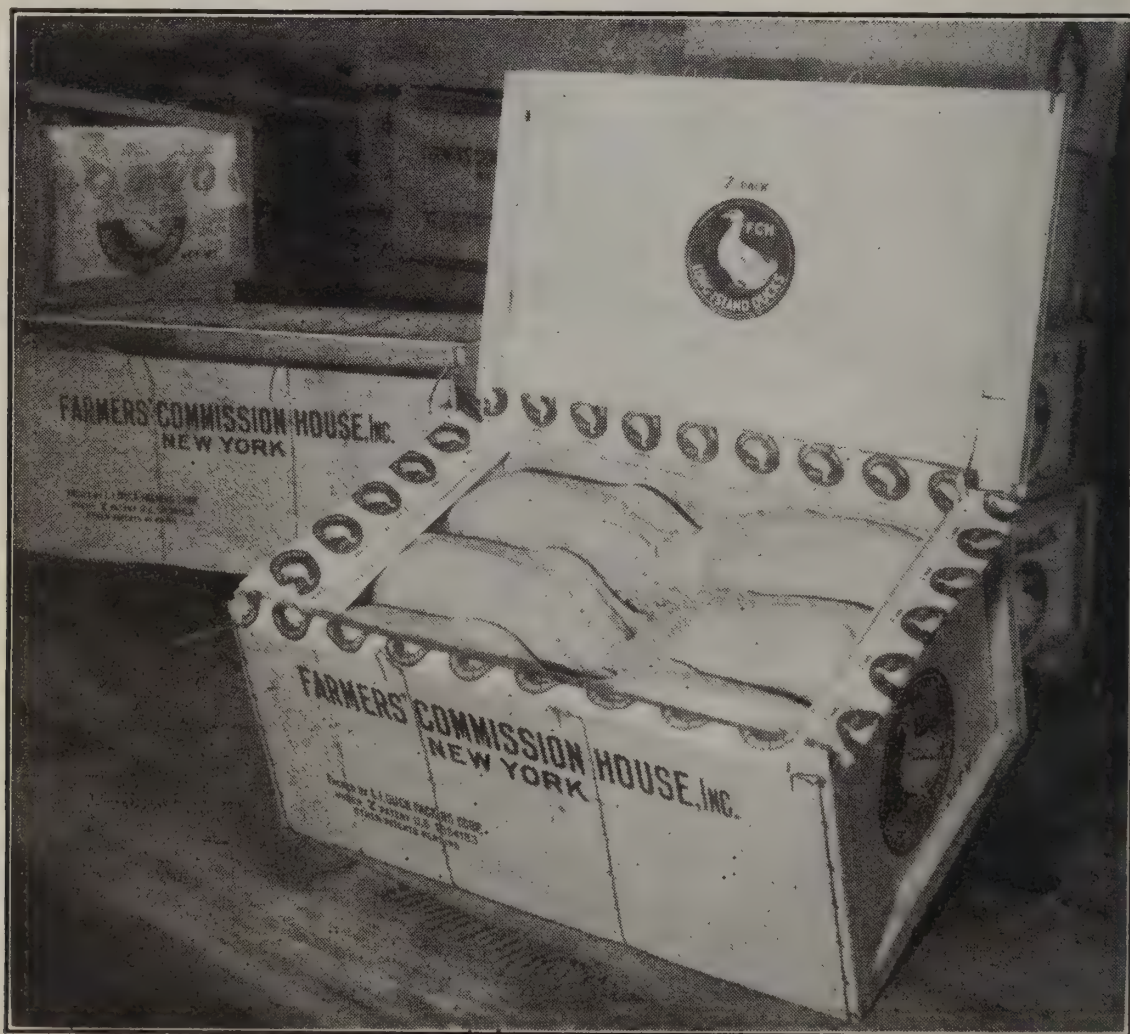
If the producer will take pains to thoroughly acquaint himself, and his help, with the market requirements, by occasionally following his shipments through to market and checking all details, better understand-

ing will prevail between shipper and agent and with less risk of loss to both.

Handling the Feathers — Under good conditions five market ducks will yield one pound of dry feathers (quills included). On the commercial farms where large numbers of ducks are slaughtered and picked annually, the feathers represent a very valuable by-product and usually sell for enough to pay for the picking. From the Long Island farms the feathers are collected in cans daily just as they come from the picking boxes. They are trucked immediately to a central feather processing plant, where they are thoroughly cleaned, dried and graded by the most modern machinery.

Feathers from ducks either dry or scald picked may be cured and sold. If wet they should be put through a wringer, or press, to remove the excess water. The feathers are then spread in thin layers on the feather loft floors or on barn floors where they can be frequently shaken up with a fork until dry. When thoroughly dry they are piled up to await bagging and shipment. The feather loft should be dry and well ventilated.

The value of feathers depends largely on the quality of the product and the quality in turn depends much upon the care given during the drying period. The price for duck feathers (white) at the farms, ranges from 30c per pound upward, depending on quality and market demand.



Courtesy Z-Process, Inc.

THE QUICK FREEZE METHOD OF PREPARING DRESSED DUCKS FOR MARKET

This new and strictly modern method of freezing and box packing holds considerable promise for the Duck Industry.



WEIGHING SAMPLES IN THE BEACON LABORATORY
Expensive, imported scales are used, so sensitive that they will weigh a pencil mark on a piece of paper

Ducks For Egg Production

For the past several years there has been a growing interest among poultrymen in the use of ducks for egg production. Ducks make their chief appeal to poultrymen by reason of the low mortality rate. Yearly mortality from all causes usually remains **under five per cent**.

The poultryman who turns to ducks because of failure to handle disease problems with hens should realize that even though ducks are not subject to most poultry diseases, they are not to be neglected. In other words, don't think you are assured of success just because a flock of ducks won't usually die from disease through carelessness.

A flock of ducks representing one of the egg laying breeds; such as Indian Runners, should produce as many or more eggs than the average flock of hens.



Beacon Research Farm.

ONE OF THE ORIGINAL PEN MATINGS OF IMPORTED KHAKI-CAMPBELLS

These three ducks are from parents with better than a 300 egg score and have laid from February 8th, 1937, to July 7th, 1937 (when photograph was taken) without a skip.

EGG LAYING BREEDS

The Indian Runner seems to be the most popular breed of laying duck in the northeastern states, although in England, where a great deal of interest is displayed in duck egg production, the Khaki - Campbells have been quite consistent winners of egg laying contests. There are very few commercial flocks of this breed in America, development of the Khaki-Campbell to date being largely for exhibition purposes.

There are several varieties of Runners, including white, fawn and broken colors. With the American feather market favoring white feathers, and the live duck market showing a preference for white ducks, the White Indian Runner has become the most popular. Egg shell color varies slightly among flocks and individuals ranging from white to an "oyster" tint.

Much improvement can and should be made with respect to higher egg yields from the more popular breeds of egg-laying ducks in America.

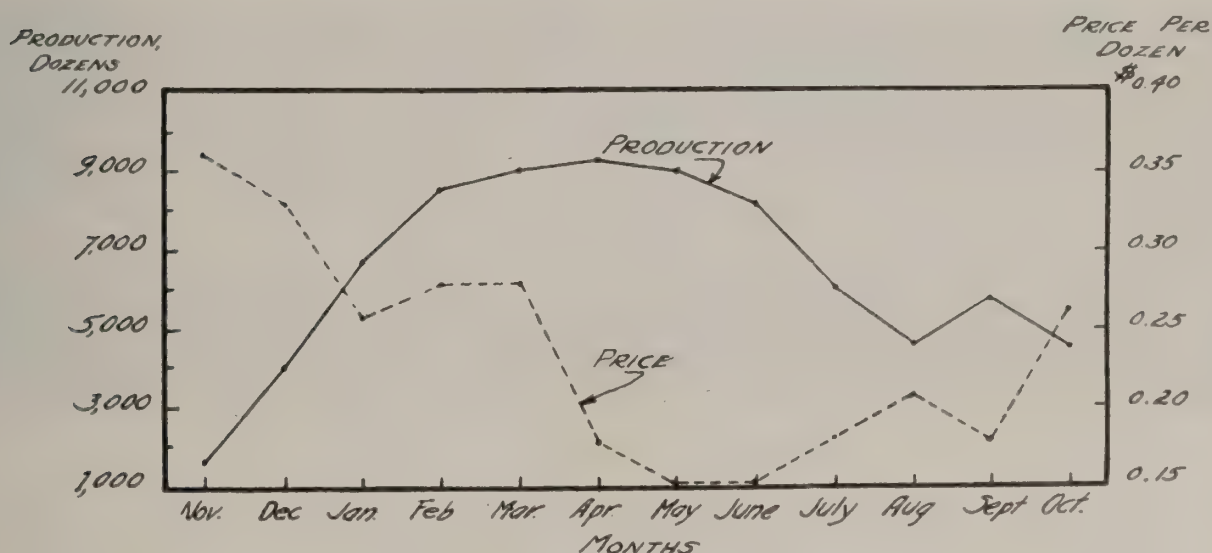
In other countries, particularly in England, flock averages commonly go well over two hundred eggs per year.

Harvel, Hurd and Misner of Cornell University conducted a farm management study of eleven White Indian Runner duck enterprises in New York State covering the year ending October 31st, 1933, in which the following conclusions were drawn:

1. "Ducks require about half again as much feed to rear and produce a dozen eggs as hens. Feed is the largest item of cost."
2. "More labor is required in feeding and in caring for the eggs from ducks than hens. It is customary to wet the mash, and all eggs must be washed as ducks lay on the floor and cover the eggs."
3. "More floor space is required per bird by ducks than hens but cheaper buildings are satisfactory for ducks."
4. "Mortality of ducks is much less than of hens but the advantage in this respect is more than offset by the higher feed charges."
5. "Shipping charges are higher per dozen of duck eggs because of less eggs to the case."
6. "If it is impossible for a poultryman to raise healthy chickens so that he continually loses money on commercial poultry, ducks for laying purposes offer one way of using the buildings. The results on the few farms studied seem to indicate, however, that ducks were not as profitable as poultry."

A review of this survey would indicate that the chief reasons for the rather unsatisfactory showing of these farms were the low average prices received for eggs and the meagre methods in feeding and management, resulting in low average egg production.

The following curves and table from the Cornell survey, show the range of production and prices for the year, also the prices by month for duck eggs compared with the prices for hen eggs in New York.



The price curve for this particular year indicates highest prices for the year occurred in November and December, but the greatest premium for duck eggs over hen eggs came from December to Easter, after which time duck eggs sold at a price below hen eggs.

The average for the year of 23.6c per dozen was the same as for "average extra" hens' eggs.

PRODUCTION AND PRICE RECEIVED ON NINE DUCK FARMS, 1932-1933

(The price of duck eggs held at rather a constant figure
from January to March.)

Price Received for Duck Eggs by Nine Farmers Compared with
Wholesale Quotations for Hens' Eggs, New York City

	Prices Received by Nine Farmers for Duck Eggs, Express Out	Prices for Hens' Eggs in New York City		
		Closely Se- lected Extras	Average Extras Cents per Dozen	Mediums
November, 1932 ..	36.0	42.5	38.0	31.8
December	33.9	35.0	33.5	30.7
January, 1933	26.1	27.2	25.5	24.0
February	28.0	17.8	16.0	15.1
March	28.0	18.9	17.1	16.5
April	18.2	19.2	16.6	15.4
May	15.1	18.2	16.0	15.1
June	15.2	20.9	17.5	16.9
July	17.6	23.0	19.8	19.6
August	20.9	25.0	22.0	21.8
September	18.3	32.4	27.5	26.1
October	26.0	37.9	33.1	28.2
Average	23.6	26.5	23.6	21.8



WHITE INDIAN RUNNER DUCKS FORAGING

Ducks will not range far from their quarters unless a brook or body of water
is the incentive.

In England where commercial egg production from ducks is more highly specialized than in America, producers have concluded that if duck eggs are sold at the **same price per pound as hen eggs**, the duckman is in a favorable position to compete with the poultryman. (Duck eggs average about 31 ounces per dozen.)

In summarizing the possibilities for ducks as a medium for market eggs, a satisfactory market must be assured. While the American public

is generally not yet educated to the use of duck eggs, there is a certain demand for them among the centers of foreign born, many of whom are educated to the use of ducks eggs and who are glad to pay a premium when uniform quality and freshness are assured. In the past the demand for duck eggs has been seasonal and centers about the Lenten period. There is no particular reason why, with due patience and education, this demand cannot be expanded over the entire year. **An important point for the producer is to safe-guard the feed and water supply to assure uniform egg flavor throughout the year.**

FLOCK MANAGEMENT IMPORTANT

While price for eggs has been the most serious influence on profit, the methods practiced by a majority of the producers in the Cornell survey show low egg production and high feed consumption per bird. (145 eggs per bird on 128 pounds of feed.) The writer is familiar with the general methods followed on these farms, having made visits at different seasons of the year. A number of these producers had recently turned to ducks because the disease problem had made poultry unprofitable and naturally at the time the survey was made, were little experienced in handling ducks.

The feeds used for rearing and egg production were either home mixed or commercial poultry (hen) mash, fed straight, or part home mixed and **not especially adapted to ducks.** The mash feeds were fed wet but the method of pouring water over the dry mash in narrow troughs and stroking it back and forth with a stick, resulted in a poor mixture and consequently a heavy percentage of waste. (One farmer estimated a feed loss of from 5 to 7 per cent.) Economic conditions at this time being unfavorable to any class of egg producer, price-buying of ingredients tempted many to feed mixtures ill-suited for best results and the radical changes in feeding resulted in many unseasonal moults among the layers.

Under these same feeding methods, the Cornell survey showed the average feed required to raise a pullet duck to be 45 pounds.

SUMMARIZED RESULTS ON FLOCK OF 133 RUNNER DUCKS AT THE BEACON RESEARCH FARM, 1931-1932

During 1931-1932 records were kept on a small flock of Runners from hatching to marketing, including a full laying year.

Total number of pullet ducks 133, including 103 White Runners and 30 fawn and white.

Hatched May 18th, 1931.

Total feed eaten first 135 days was:

Beacon Duck Starting and Growing Pellets	23.81 lbs.
Beacon Special Scratch Grains	7.29 lbs.

Total	31.10 lbs.
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The young ducks were allowed free range of clover and blue grass. Average weight October 1st, 3.92 pounds.

These 133 ducks laid 53 eggs in September or before they were 4½ months of age.

Average egg production per duck for twelve months, ending August 31, 1932, was 194 eggs.

Average daily feed consumption per duck:

Beacon Duck Breeder Pellets 0.257 lbs. (self fed)

Beacon Special Scratch Grains 0.101 lbs. (self fed at night)

Total

0.358 lbs.

Floor space in house per duck, 4 square feet.

Ducks had exercise yard and concrete swimming pool (ditch type) throughout the year.

No green food after October 1st.

Mortality: eight ducks, including six by accident.

The 125 ducks remaining September 8th averaged 4.26 pounds when sold.

Highest production, 84.9% in February.

Lowest production after peak, 46.5% in August.

REARING DUCKS FOR EGG PRODUCTION

Ducks raised for egg production may be brooded in the same manner as described for market ducks. They should get out of doors as soon after ten days old as the weather will permit.

Because of the best prices for duck eggs beginning in December, the hatching date should come about six months previous, so that the flock may be in heavy lay during the period of best prices.

The feeding program, described in this bulletin, for market ducks is satisfactory for the first seven weeks except that it is better for the ducks which are to be retained as layers, if they can be allowed the opportunity of foraging for green food at an earlier age.

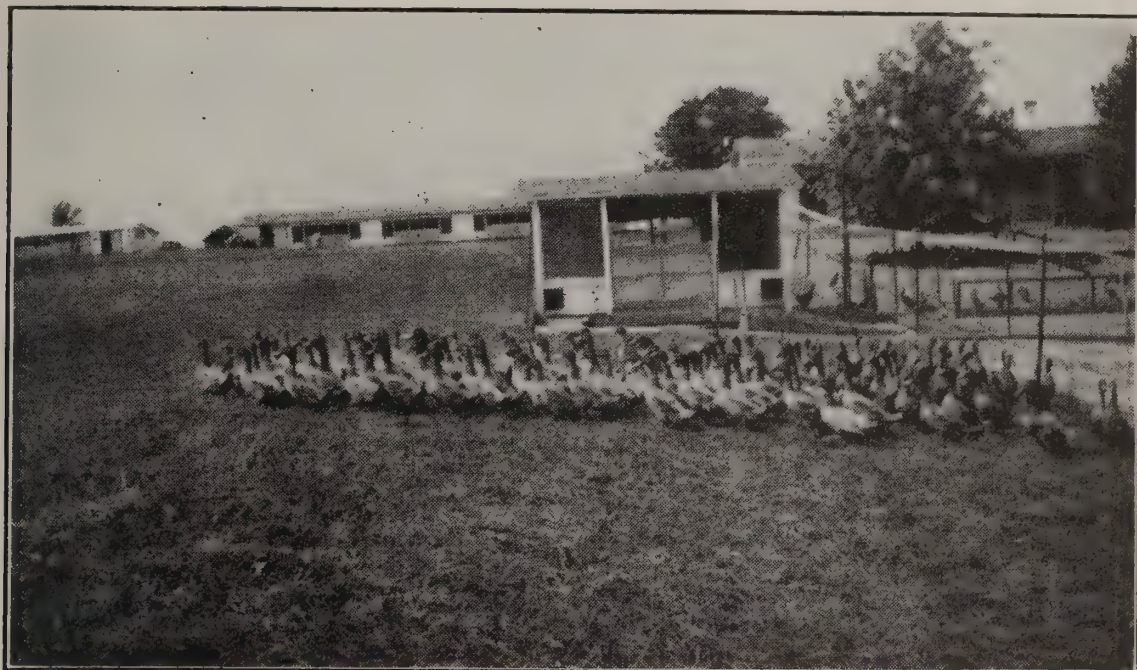


Beacon Research Farm.

TWO WEEK OLD KHAKI-CAMPBELL DUCKLINGS

When the flock is about seven weeks old the drakes may be detected and should be separated from the ducks. By driving small groups at a time into a small catching pen and carefully lifting each one up by the neck or wing, the sex may be determined by the noise. Drakes produce a muffled sound, while only the females make a quack. In this manner, a large flock may be sexed rapidly.

From this period on the drakes may be handled in the same manner recommended for market ducks of the meat breeds. The pullet ducks



Beacon Research Farm.

A FLOCK OF YOUNG KHAKI-CAMPBELL PULLET DUCKS
Growing pellets, hard grains and green forage develop solid fleshed,
close feathered, vigorous layers.

represent future layers and emphasis should be placed on growth, exercise and hardiness for the strain of heavy production, which is to come later. See "Management of Breeders After They Are Selected" for handling the flock (but the feeding plan is different).

DEVELOPING THE YOUNG LAYERS

If the flock is to be in laying condition at five months of age, growth and development must be continuous.

The following program of feeding will make solid, well developed birds of good body weight at 4½ to 5 months.

7-12 Weeks—

Beacon Duck Grower—self fed.

Beacon Duck Fitting Grains—self fed.

Green pasture range. If pasture not available, give fresh cut greens daily.

Clean running brook, pond or swimming pool to induce exercise and keep plumage in good condition. If the birds become lazy and depend too much on pellets and grain, the supply should be limited to force exercise and foraging.

13-20 Weeks—

Beacon Duck Grower and Beacon Duck Fitting Grains, self fed or limited, depending on season, condition of pastures and body weight. More or less moulting will usually occur during this period and there will be periods when the appetite will fall off some. If the flock becomes inactive, the hours when they have access to the grain and pellets may be limited to induce foraging.

Well ventilated houses or sheds are satisfactory for the flock at night but if weather is mild they are more comfortable out of doors day and night. If the flock is large or inclined to be nervous, lights at night are advisable.

FEEDING THE LAYERS

Beacon Duck Laying Feed (pellets) is the ideal feed if the flock is kept primarily for market egg production. If the birds are to be mated up and the eggs used for hatching later in the season, Beacon Duck Breeder Feed is recommended from the start.

If possible to do so, drakes should be kept apart from the flock until about a month before fertile eggs will be needed. Infertile eggs are preferred for market and the drakes are often an annoyance to the ducks.

After the Young Layers are about 20 weeks old, gradually replace Duck Grower with Duck Laying Feed (make change in ten days to two weeks). Fill hoppers with a mixture of 75 to 80 per cent Beacon Duck Layer Feed and 25 to 20 per cent Beacon Duck Fitting Grains.

If the young layers are in good body condition, leave the hoppers open one hour in the morning and two hours at night. If they are thin or if they are already laying the hoppers may be left open for a longer time. About April first start reducing the Fitting Grains five per cent each month until you are feeding ten per cent grains and ninety per cent laying pellets.

It may be necessary at times to limit the amount of either grain or pellets, depending on production and the length of time the flock is expected to lay. Based on past market conditions the price of duck eggs after Easter declines quite rapidly, making it advisable in some instances to market the layers. If the owner has no intention of hatching ducklings in late spring and summer, it may be more profitable to get all the eggs possible up to that period and dispose of the flock when the price declines. Less grain feeding would be in order for a short season. On the other hand, body upkeep is necessary if the birds are to continue in good production through the summer.

THE FLOCK IN PRODUCTION

The flock should be placed in their regular laying quarters when cold nights may be expected, particularly if production is starting. See paragraphs on "Breeder House" for laying house conditions. Nests supplied with fresh clean litter will greatly lessen the time and labor of washing eggs.

Earth floors are generally better than wood or concrete. If the latter is used the litter should be deep enough for good insulation and should be changed when it becomes wet. A sandy soil is best or if drain tile is

laid just under the surface and about eight inches of coarse sand spread over the top, less bedding and labor in cleaning will be required.

Straw or shavings make satisfactory litter and should be changed sufficiently often to provide dry comfortable quarters.



Beacon Research Farm

A PEN OF LAYING DUCKS

A screened platform under water trough saves bedding. Note the open type nests along wall, windows near the floor at back of house provide extra light and may be removed in hot weather.

LIGHTS

All night lights are recommended, especially if heavy production is desired during the winter months. If difficulty is experienced in getting the birds into production and all other conditions are favorable, lights will usually throw the flock into production in nine or ten days. **See recommendations for lights on breeders**, under Market Duck Production.

Good ventilation is important. More birds may be carried in a well ventilated house. Under good conditions three square feet of floor space per bird is ample. The temperature of the house should be above freezing if possible, but if direct drafts are avoided ducks will do well even in severe weather.

The layers should go out of doors during day time, even in winter, unless stormy. Water for swimming is not absolutely necessary, but a brook or pool provides exercise, promotes health, keeps the eyes, bills and vents clean and gives lustre to the plumage.

A flock started in October and well managed through the winter should not go below 50 per cent before May. Moulting should not seriously affect production before May or June unless unusually warm weather occurs early.

Should there be signs of moult and decline in production earlier in the spring, 4 to 6 pounds of Beacon Fleshing Pellets daily for 100 birds, are recommended as a substitute for that amount of grain.

The recommendations for drinking fountains, oyster shell and grit, etc., are the same for layers as for breeders. (See Index.)

PREPARING EGGS FOR MARKET

Ducks eggs should be collected as early in the morning as possible. This will prevent their freezing in winter time. Getting the eggs to a cool place quickly, especially in summer improves their quality. Ducks are creatures of habit. If they are let out of doors regularly and at an early hour from the start, laying is usually completed early in the day.

All soiled eggs should be washed and the job requires less time if done promptly after they are gathered. Frequent changing of nesting material will reduce the number of eggs to be washed. Submerging all soiled eggs in water for a few minutes and using a small brush makes the work easier. Rinse eggs in clean water and lay on racks to dry. When thoroughly dry, they may be packed in cases. (Do not pack eggs that are warm.)

If duck egg cases are not available, ordinary hen egg cases will do, provided the diagonal section of each filler is left empty. This will permit 25 dozen to the case. It is usually necessary to tack $\frac{1}{2}$ inch riser strips of wood on top of the ends and partition of the crate before nailing the lid down.

From the time eggs are taken from the nests they should be kept in a cool dark place. A temperature between 55 and 60 degrees F. is best.

Careful handling and prompt marketing will go far toward educating the public to a more general use of duck eggs.



CAN YOU TELL WHICH ARE DUCK EGGS?

The carton at the left represents chalk white Leghorn eggs averaging 24 ounces per dozen. The center carton represents 29 ounce White Runner duck eggs (from pullet ducks after several months' lay). The carton at the right represents eggs from second year Runners and average 33 ounces per dozen.

SEXING DAY-OLD DUCKLINGS

Recently much interest has developed in the matter of sexing day-old chicks and to some extent with day-old ducklings.

While the early determination of sex in ducks is much easier and very accurate, its practical value is limited. Ducklings of the meat breeds

are usually hatched for market purposes and no differentiation made in sex. Hatcherymen specializing in day-old ducklings of the laying breeds may find it practical to offer only female ducklings to customers who desire to start flocks for egg production and who may not care to bother growing and marketing the drakes.

By eliminating the drakes immediately the customer is spared the transportation costs, extra brooder space and bother of sexing later on. Cost of sexing, premium charged for 100% females and disposition to be made of the drakes, will usually determine each individual case.

The method of procedure as given is taken from an article on "How To Sex Day-Old Ducklings" by Violet K. Tallent, 1934-35 Year Book of



The British Duck Keepers Association. Credit is due the author of the article for directions on sexing and to Mr. Ruff Jackson for accompanying illustrations.

"To avoid chilling the newly-hatched ducklings always sex them in a warm room.

"Only drakelets are discarded. Any mistake will mean the inclusion of a drakelet among the ducklets.

"The correct handling can be practised on dead ducklings but, to prevent the spread of disease, disinfect the hands before passing on to live ducklings.

"The difference between the sexes is easily seen, but some people find a watch-maker's magnifying glass helpful.

"If the beginner has difficulty in sexing a duckling he should put it aside and return to it later after sexing a few more. Ducklings can be hurt by too much handling.

"At hatching the cloaca is often full of greenish excreta. Some people find it more pleasant to sex the ducklings at a few days old.

1. "Take hold of the duckling's tail between the first finger and thumb of the left hand so that its breast is upwards and away from you and its head hangs down. (Fig. 1.)

2. "Then stretch the cloaca longitudinally by bending the duckling gently but firmly over the first finger and holding its body there with the middle, third and little fingers.

3. "Now stretch the cloaca transversely and so force out the copulatory organ, if it is there, by closing the thumb and first finger of the left hand, placing them while closed on the cloaca and then parting them slowly. It is important that the thumb and first finger are kept together until they are placed on the cloaca because before they are parted, they must catch the edge of the cloaca and exert sufficient tension to force out the copulatory organ. This organ looks like a pinkish root tip and its presence denotes a drakelet. No such organ is seen in the cloaca of a ducklet. (Figs. 2 and 3.)

"Geese can be sexed in the same way."



ANOTHER CORNER OF THE BEACON LABORATORY
Fat and Fibre Analysis Apparatus shown in background

Duck Diseases and Other Troubles

Ducks are subject to very few of the many diseases common to most poultry.

Because of this very fact, many growers have become careless of such important factors as sanitation, feeding, brooding and ventilation. Mouldy or spoiled feed is perhaps one of the most common causes of losses on the commercial duck farm.

Pellet feeding has greatly lessened the chances of sickness resulting from sour or spoiled feed—thus removing one of the greatest mortality hazards on the duck farm.

If wholesale duck raising is to continue in concentrated areas, more emphasis will have to be paid to the matter of preventing disease epidemics which take heavy toll among the young ducklings.

Unfortunately, up to the present time, the duck raiser is without much definite assistance of an authoritative or practical nature in the prevention and control of diseases affecting ducks.

Laboratories have, apparently to date, been unable to offer a definite program for the prevention and control of the several types of infection which have caused heavy losses to individual growers from time to time. The one recommendation universally offered, however, is **sanitation**.

Until such time as we have more definite knowledge of the organism or organisms responsible for disease epidemics among ducks, much depends upon **preventative** measures. It appears from experience that severe outbreaks are the result of accumulated infection about the premises and a general epidemic awaits only a lowered resistance of a few individuals with the result that mortality may claim a heavy percentage of the entire flock.

PREVENTION THROUGH SANITARY MEASURES

No enterprise involving livestock or poultry has ever endured for long without its accompanying disease problems and the employment of rather definite sanitary measures for the prevention and control of parasites and disease.

It is, therefore, entirely natural that farms in close proximity and raising millions of ducks annually, would have their disease problems calling for a sanitary program.

The following simple directions are suggested in view of the rather encouraging results obtained when carefully carried out. They are not offered as absolute assurance against disease outbreaks, but appear to be well worth a trial. The time and expense involved are very reasonable.

The recommendations are as follows:

Between Seasons

1. Remove all manure from all buildings and sheds in which ducks have been quartered. Thoroughly scrape and clean all walls, partitions, gates, feeding and watering equipment, nests, etc.
2. All loose equipment should be set out in the direct sunlight after it has been cleaned and allowed to remain for several days.
3. Open or remove all doors and windows to let as much fresh air through the houses as possible.
4. Thoroughly clean and scrape all yards (remove fences where possible) and harrow or shallow cultivate the bare surface several times at weekly intervals to permit the sunlight to kill germs in the soil.

5. After houses and yards are cleaned, aired and exposed to sunshine for some time, fresh clean sand should be hauled in and spread evenly over all surfaces. Green crops such as winter rye may be seeded if desired, but several cultivations before seeding are helpful in killing germs by exposure to sunlight.
6. Just before each house is to be occupied at the start of the season, thoroughly spray walls, ceilings, partitions and all equipment.
7. Before putting any bedding on the floors, thoroughly wet down with a 10% solution of a good coal tar disinfectant (an ordinary sprinkling can is satisfactory for floors). After the floors are dry, fresh clean bedding may be put down.

Program During Season

1. Completely remove manure from all houses and sheds each time the ducks are shifted, at least each two weeks—each week is better—and before re-bedding the floors, thoroughly wet down the surface with a 10% coal tar disinfectant. Shift all moveable equipment and make a thorough job. If low, wet, filthy places are found around feed or water equipment, remove all filth, disinfect and refill with clean sand before rebedding.
2. Scrape and remove all manure from yards at frequent intervals.

CHOLERA

Dr. K. F. Hilbert, Pathologist at the State Institute of Agriculture, Farmingdale, N. Y., who has for many years worked closely with the commercial duck farmers of Long Island, reports that of the ducks diagnosed and showing bacterial diseases, fully eighty per cent of those causing mortality are due to cholera.

Cholera is a highly infectious, rapidly fatal disease of all domestic birds. Ducks of all ages are susceptible.

Cause — Cholera in ducks is caused by *Pasteurella Aviseptica*, the same organism which is responsible for cholera in chickens. The germ multiplies to enormous numbers in the blood and various organs of the body, producing septicemia or blood poisoning.

The disease is carried by sick or recently recovered birds which have been placed in a healthy flock, by wild birds, or by persons, animals or by utensils which have been used on infected premises. It spreads rapidly throughout the flock, owing to the fact that the first birds to become infected give off great numbers of germs and these germs are picked up by the other birds by breathing and not by drinking or feeding unless by this act the germs gain entrance to the respiratory tract.

Symptoms of cholera are quite characteristic. The ducks affected show evidence of pain, become feverish and move about only when disturbed, may walk with body more or less rigid. There is complete loss of appetite, droppings are thin and of a greenish

or brown color. The flock may appear normal and within a few hours several ducks may become sick and possibly some already be dead.

Treatment of affected birds is futile and the aim should be to prevent so far as possible, the spread of infection by vaccination of the remainder of the flock. Ducks showing acute symptoms of the disease should be immediately destroyed by a method which will guard against contamination of the premises by infected blood. The carcasses should be burned or buried deeply.

Control of cholera on commercial farms is best handled by innoculating the flock with a bacterin at the rate of 1 c.c. for ducklings and 2 c.c. for older ducks, administered under the skin with a hypodermic needle.

LIMBER NECK

Botulism

True Botulism is the type of disease which is commonly called "ptomaine poisoning" when it appears in humans. However, in poultry, there are quite a number of causes of the condition generally called by the term "Limber Neck" and characterized by a paralysis of the muscles of the neck which may be either complete or partial. In the complete paralysis the bird is unable to raise its head from the ground. There are a number of different types of paralysis including "range paralysis" (neurolymphomatosis) which may cause this condition and it is advisable for the poultryman to have any birds

which exhibit this condition examined in a well equipped pathological laboratory. Otherwise, a mistaken diagnosis may be easily made.

In true Botulism the cause is a germ (*Clostridium botulinum*). This germ produces a powerful toxin which acts on the nervous system and causes paralysis.

The causative organism is quite common and is especially likely to be found in spoiled or putrid material. Fly maggots which have bred on such material may carry the organism. Eating the infected food causes the absorption, from the crop or intestines, of the poisons developed by the bacteria.

Dead ducks, chickens, rats, mice, and any other animals or birds that may die around the place are a common source of trouble from "Limber Neck." The quarters should always be carefully searched at periodic intervals to make sure that there are no dead birds around where the other birds can get at them.

Symptoms of Botulism — In birds which have this disease the "Limber Neck" or other paralysis is likely to be preceded by a dull and sleepy appearance and sometimes weakness or unsteadiness on the legs.

As the disease develops the birds are likely to be totally paralyzed. On post-mortem examination there may be some inflammation present in the intestines but this is not always found. There are no other reliable indications which may be utilized for diagnosis.

Mortality may be limited to a very few individuals or may affect a large flock depending on how much of the infected material may have been present on the premises and how many birds had access to it.

Treatment — The usual treatment is a purgative such as Epsom Salts at the rate of one pound to each five gallons of drinking water and if necessary the birds can be given individual dosage with a catheter directly into the crop.

There is an anti-toxin available but it is not widely used for poultry and frequently by the time the anti-toxin can be obtained it would be too late to be of any use.

CHILLS AND PNEUMONIA

A common fault among duck growers is to crowd the brooder houses greatly beyond their capacity. In recent years ventilation systems, properly installed, have done wonders in overcoming the bad conditions from over-

crowded houses. Overcrowded brooder houses with no means of ventilation have cost duck growers a tremendous amount of money. (See "Ventilation.") During cold weather a brooder not properly ventilated becomes stuffy, the ducks become sweated up and chill. The symptoms are those of rough sticky coats on the young ducks, scaly backs, watery eyes. The ducks produce wheezing and sniffing sounds as they breathe; some will show swellings on the sides of their heads and a general unthrifty appearance will prevail throughout the flock. Any house showing moisture on the ceiling, is evidence of poor ventilation.

Treatment consists of lessening the crowded condition immediately, cleaning the pens, rebedding frequently and providing a change of air, but gradually to prevent chilling. Spray the pens thoroughly with B-K Solution or Sterilac. Chic-Tone Inhalant in a very fine spray about the heads of the ducks will be very helpful. Also give Baking Soda in the drinking water for 12 to 15 hours, at the rate of one teaspoonful per quart of water.

COMMON DIARRHEA

This disease is often confused with White Diarrhea. It may appear among ducklings at a very early age by over-feeding, chilling, overheating or allowing ducks to have ice cold drinking water, the feeding of rancid cod liver oil or giving too much good oil. Any poisonous or indigestible food if given in sufficient quantity will cause diarrhea.

Symptoms are presence of a diarrhea showing on the down about the vent.

Treatment consists of first removing the cause and second in giving the ducklings a teaspoonful of bicarbonate of soda to each quart of drinking water for one day. Repeat after two or three days if necessary. Clean the pens thoroughly after each soda treatment.

QUILL PULLING

Feather pulling is a habit which ducks are apt to form if confined in the house or restricted quarters for too long a time. It usually occurs in the early spring among ducks at about the 6th or 7th week of age. Contrary to the belief of many, it is not necessarily caused from a lack of Beef Scrap in the ration.

Quill pulling may also be the forerunner of a disease outbreak in the

flock as the ducks may become very nervous during the incubation period and before reaching the epidemic stage.

Symptoms—The appearance of blood on wings where the quills have been picked out.

Treatment consists of shifting the ducks to roomier quarters or to water if possible. Remove the offenders if possible to locate them. Watch for other symptoms.

PROLAPSE OF THE OVIDUCT

Prolapse or eversion of the oviduct is much less common in a flock of laying ducks than among laying hens. Possibly because ducks are more resistant but more likely to the fact that ducks are usually given more freedom; it being customary to leave the breeder ducks out of doors during the day time throughout the winter and they get plenty of exercise, swimming and playing in the water.

Practically all mortality from Prolapse is due to ducks picking at those suffering from Prolapse and "Pickouts" is the end of such victims. If a duck in production shows a partial eversion of the oviduct just after laying, this attracts other ducks in the flock and they may soon render the bird worthless.

Cause may be due to one or a combination of a great many factors. In general it may be said that a lowered muscular tone prevents the normal contraction of the vent after the egg has passed through the oviduct. Heavy corn feeding produces an excess of soft fat and the pressure of this causes irritation and congestion of the oviduct, likewise corn feeding produces soft muscles which lack the strength to hold the oviduct in position. Rations deficient in minerals may weaken the bones so that too much strain is on the muscles. Forced production through heavy feeding or feeding a ration that is constipating should be avoided.

Keeping the flock shut up in the house too late in the morning makes the birds irritable and encourages the picking habit. Picking also occurs in the pens or in the water at the time

of, or immediately after, treading by the drake.

Symptoms—The affected ducks will show a partial prolapse or eversion of the vent and the presence of blood indicates that other ducks have already been picking at the exposed tissues. Birds so affected may continue in this condition for several days until a dark brown scab forms over the exposed portion which gradually becomes smaller until it drops off or the ducks may continue picking until the entire oviduct comes out and the victim dies in a few hours.

Treatment—First make sure that all of the above possible causes are eliminated.

If the birds appear to be constipated add 1½ quarts of heavy mineral oil to 100 pounds of pellets or mash feed. This combination should be given once a day, at night, decreasing to every other day or less as the trouble disappears.

Ointments prepared for the control of cannibalism in chicks may be applied around the vent of all affected birds; also, to a few more in each pen, will prevent further picking of such individuals.

DOUBLE YOLK EGGS

The production of double yolk eggs is most likely to occur at the start of the laying season. Getting the layers into production too rapidly is the chief cause. Too heavy feeding of corn may be a possible cause of a high percentage of double yolks. This is an extra strain on the bird's oviduct and may lead to Prolapse.

Treatment is largely a matter of correction or prevention of the causes.

ACUTE INDIGESTION (Colic)

Acute indigestion or water colic is the result of allowing ducks to drink very cold water when they are warm or when they are not accustomed to cold water. Ducks so affected will turn over and die within a few minutes.

As the ducks usually die very quickly, little may be done and treatment lies in prevention.

SERVE DUCKLING OFTEN

Low cost as compared to other poultry, and the many appetizing ways to serve left-overs, make roast duckling a favorite in the economy budget. *Duck meat is high in nutritive value.*

The carefully guarded feeding and water conditions on commercial farms afford assurance to the housewife that duckling from such farms are of uniform flavor and excellence. Usually tags, bearing the grower's name, are attached to each duckling.

Many excellent recipes have been created by the marketing associations of the various Long Island and Massachusetts producers, of which the following recipe is typical.

HOW TO ROAST A DUCKLING

Ducks are prepared for roasting just as any other fowl. After the bird has been drawn, be very certain that every particle of the kidney and lung tissue has been removed, then thoroughly wash out the body cavity with cold water. Flavor may be impaired through the neglect of such details.

The kind of dressings used may be governed by individual taste. Bread dressing, tastily seasoned, may be used. For festive occasions coarsely chopped apples and raisins are added to advantage. A chestnut dressing, though more expensive, blends exceptionally well with the savory duck flavor.

Bacon fat rubbed over the skin before dredging with flour prevents the skin from bursting in the early stages of roasting and keeps the juices in.

Place the duck breast down in pan and roast in a hot oven for the first half hour. Baste every ten minutes. Pour off a portion of the fat from the pan and replace it with water and continue basting. Ducks require from two to three hours roasting, depending upon the age of the duck and type of oven.

For the last hour of roasting ducks should be turned breast upward in pan. If desired, a few strips of bacon may be laid over the breast several minutes before roasting is complete. *Roasting should continue until it is evident that the meat will free itself from the bones readily.*

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